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mountain states mineral enterprises, inc.

ARABIAN MINING PROJECT

PHASE I DEVELOPMENT REPORT

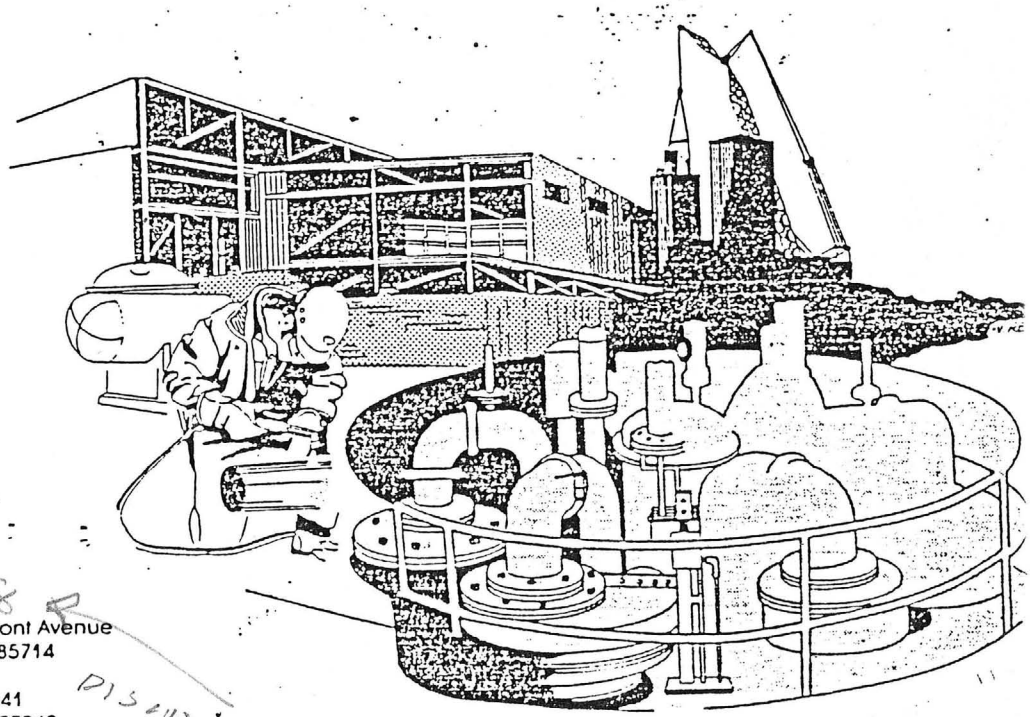
PREPARED FOR

WESTAR HOLDING CORPORATION

3639 E. Harbor Blvd., Suite 210
Ventura, CA 93001

805

Job. No. 4155
September 1987



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DISMANTLED

CYANIDE LEACH TESTS ON ARABIAN MINE SAMPLES

For

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By

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1.0 INTRODUCTION

The Arabian Mining Project is located approximately nine (9) miles east of Bullhead City, Mohave County, Arizona. The project area is comprised of three (3) patented claims and 31 unpatented claims, forming a rectangular area approximately 6,800 feet N-S by 3,600 feet E-W. State Highway 68 bisects the area and passes through the patented claims. The unpatented claims are located on BLM land. More precisely, the project area is located in Section 20, T 21 N, R 20 W. Crown Resources has located unpatented claims in Sections 16, 17, 18, 19, 21, 28, 29 and 30 which border the Arabian Project Area.

As initial study by MSME of available data on the Arabian Project claims indicated reserves in excess of 500,00 tons of material averaging 0.046 ounces per ton of gold. These reserves were located predominantly in the patented claim area and south of the old Philadelphia workings. While these reserves could provide a development base, there was no sound information available as regards the potential for additional deposits, particularly within the unpatented claim areas.

Accordingly, it was decided to proceed in succeeding development phases which would provide decision points at various stages. Phase I of this program was outlined to:

1. Conduct surface geology investigations to locate those areas which might hold potential of ore grade mineralization.

2. Conduct a metallurgical test program on fresh samples to determine plant design parameters.

3. Prepare a topographic map of the mine at 1:200 scale with 4-foot contours of the project area for use in future design work.

4. Investigate the various permit requirements and procedures to be fulfilled in developing the project.

This report presents the results of the Phase I effort.

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2.0 SUMMARY

Phase I of the Arabian Mining Project Development Program was designed and carried out to:

- Provide geologic data on the project area outside of the main fault area.
- Provide topographic mapping of the entire area of suitable scale for use in engineering design work.
- Conduct metallurgical investigations to determine process requirements.
- Develop a basic open pit mine plan for explotation of the known ore body on the Rising Fawn claim.
- Investigate the various permitting requirements required to construct and operate a mine and treatment plant.
- Develop order of magnitude capital and operating cost estimates for use in studying the economic options of the property.

2.1 Geology

Mr. Joseph Shearer conducted a geological survey of the entire area with geochemical sampling of selected areas. The structural geology of the Arabian Fault is quite complex with multiple shears and faults. Principle rock units are:

- Quaternary alluvium: stream fill
- Tertiary rhyolite: dikes, welded tuffs, and flow breccias
- Precambrian granite: granite, diabase dikes, and pigmented bodies

Fault flexures (changes in direction and dip) occur in the central area of the claim area and where the fault crosses the highway. These flexures appear to have provided the dilation and other necessary conditions for deposition of the precious metals in the Rising Fawn ore body.

Geochemical assay data in general show that samples with high gold and silver have high As, Sb, and Hg. Geochem analyses of the twelve surface samples taken for metallurgical studies bear out this relationship.

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In summary, there are no indications of mineralization away from the fault zone that warrant investigation. Additional sampling is warranted along the fault to the north. A drill program will then be required to determine if mineralization extends to depth if surface results give positive results.

Mr. Shearer's report is included in Section 4.3 of this report.

2.2 Mining Program

Based upon new topography and samples taken over the surface of the Rising Fawn ore body proven and inferred reserves were increased to 772,337 tons of ore averaging 0.0452 ounces of gold. This calculates to $18.10 per ton gross value at a base price of $400.00 per troy ounce. Silver values have not been included due to the generally erratic grade and low recovery of this metal. As some 200,000 tons of this ore is considered inferred, a sampling and drilling program is recommended to confirm this tonnage and grade. Details of this program is found in Section 4.2.

As indicated by Mr. Shearer, the Rising Fawn ore body appears to have been influenced by flexures in the fault and therefore extension of the pit along the fault to provide additional reserves appears remote at this time. Accordingly the mine plan was developed to exploit only the projected reserves.

The mine program is based upon producing an average of 583 tons of ore per day on a one shift per day, six day per week schedule. This mining rate will produce 180,000 tons per year of ore for leaching and provide a 4.3 year mine life. As a good portion of this ore body is above the highway level (2400-2420' elevation) the first three years of operation will essentially be a benching operation with favorable stripping ratios. As pit operations progress below elevation 2400, the waste to ore ratio will increase and be quite high as the pit bottoms out at the 2340' elevation. Annual production rates and ratios are tabulated below:

Year	Ore	Waste	Total	W/O Ratio
1	180,000	102,956	282,956	0.57:1
2	180,000	263,555	443,555	1.46:1
3	180,000	427,888	607,888	2.38:1
4	180,000	427,639	607,639	2.38:1
5	52,337	242,451	294,788	4.63:1
Total	772,337	1,464,489	2,236,826	1.90:1

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Mine operations will be carried out on day shift using a bulldozer with ripper to break ore. Ore and waste will then be loaded into 25-ton capacity trucks by a front end loader for haulage to either the crushing plant or waste dump. These two areas will be relatively close as shown in the accompanying Plot Plan to minimize haulage distances.

It is anticipated that a significant quantity of material is rippable but blasting will still be required periodically. On some occasions it will be necessary to close traffic on SR68 temporarily and to provide a crew to clear the road of any stray rocks that may reach the road.

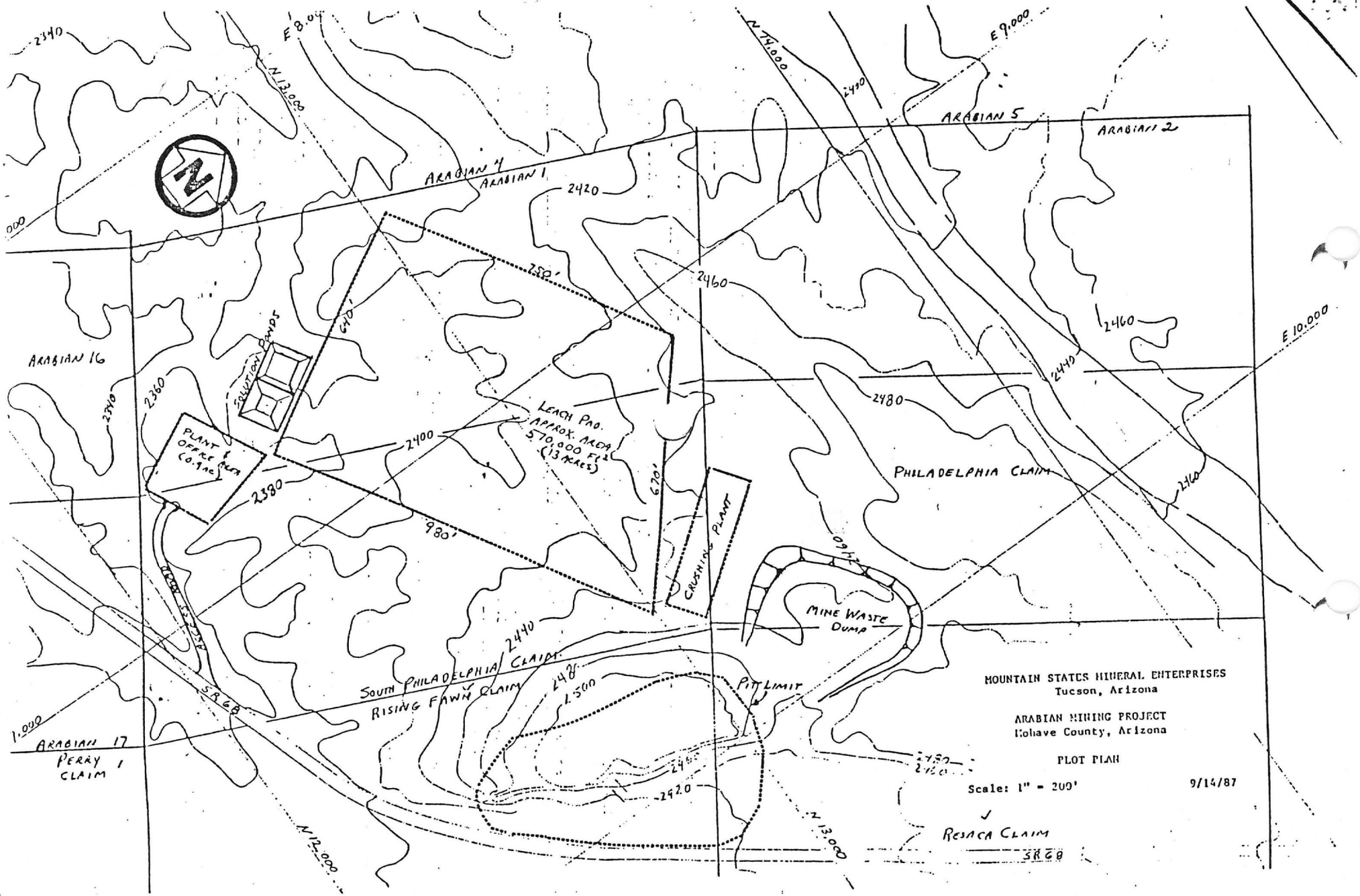
The subject of mining adjacent to the highway has been discussed with the Arizona Department of Transportation (ADOT) and there is no regulations against this as long as it does not encroach upon the right-of-way. The 100-foot wide ROW was granted in perpetuity to the state. ADOT has been advised by letter of this potential operation and no conflict is indicated.

2.3 Metallurgy

Two bulk samples were obtained for metallurgical testing at the MSRD laboratory in Tucson. The first sample was cut from four selected sites in the Rising Fawn Adit and represent some of the different ore characteristics found within the ore body. After each of these samples was assayed to confirm gold content three of them were composited and designated as the Adit Sample for testing. The second sample, designated the Surface Sample, was composited from 12 individual rock samples taken from a grid laid out on the surface on top of the ore body. The two test samples averaged as follows:

	Gold, OPT	Silver, OPT
Surface Sample	0.064	0.15
Adit Sample	0.052	0.77

A series of bottle roll cyanide leach tests were made on each sample with the test samples crushed to different sizes. One test was also made at -80 mesh size to verify that the gold was completely extractable.



MOUNTAIN STATES MINERAL ENTERPRISES
Tucson, Arizona

ARABIAN MINING PROJECT
Mohave County, Arizona

PLOT PLAN

Scale: 1" = 200'

9/14/87

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The process building and a small shop in the crushing plant area will be of prefabricated design. The balance of the structures required will be mobile trailer units supplied on a rental basis.

2.5 Permitting

Key permits required will be a Groundwater Quality Protection Permit from the Arizona Department of Environmental Quality (ADEQ) and a mining permit from the BLM. Other permits, while required, are of a more routine nature and will not require the effort these two require.

Upon decision to proceed, the permit applications can be initiated using the design data developed to this point.

3.0 RECOMMENDATIONS

Mining of the Rising Fawn ore body appears economically attractive based upon the capital cost, annual operating cost and potential return at current gold prices. However, a full economic analysis has not been made to evaluate the cost of capital, taxes, royalties, etc. as these can vary widely upon financing arrangements by Westar. It was envisioned earlier that at least a portion of the operating profits would be expended in exploration for additional ore to enhance the overall economics. //

It is recommended that the following steps be taken at this time to forward the project to the next "go/no-go" decision point.

1. Implement the sampling and drill program outlined in Section 4.2 to verify or revise the reserves as now estimated.
2. Proceed with preparation of the application for the Groundwater Quality Protection Permit based upon the locations and conceptual designs in this report.
3. Proceed with preparation of the mining permit applications and others required.
4. Institute a search for appropriate crushing plant units for purchase.
5. Proceed to locate potential equipment renters for the mine operation. At least three should be located to compare and negotiate eventual rental prices.
6. Conduct laboratory investigations on available samples to determine the best agglomeration reagent and solution mix on -10 mesh material.

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4.0 GEOLOGY

4.1 Introduction

The geologic study in this phase of the development program was primarily directed toward evaluation of the mineral potential in the unpatented claims areas lying on the easterly and westerly sides of the main Arabian fault line. This work was conducted by Mr. Joseph Shearer whose report has been included as Section 4.3. He has concluded from his investigation and that future exploration work consisting of surface sampling and drilling be conducted along the fault, particularly its northern extensions. The south extension through the Perry claim could be considered as a secondary target.

Surface sampling for metallurgical testing indicated a larger exposure at the surface than originally calculated but requires additional effort to rise it from an inferred to proven category. A first order program to accomplish this is outlined in Section 4.2.

4.2 Drill and Sample Program

The surface sampling for metallurgical test samples indicated a broader area of ore grade material above the Rising Fawn deposit than had been projected earlier from drill hole data. Additionally, better topographic data increased the volume of rock above the road level. The projection downward of the surface assay data plus the increased volume of material resulted in a calculated reserve in the 770,000 ton range. This is considerably higher than the original estimate and at least a portion must be considered as inferred rather than proven at this time. A first order sampling and drill program is outlined in the following subsections to prove up these reserves prior to start of a mining operation. Should this area prove economically viable to exploit, an additional drill program to the north and south along the Arabian fault should be implemented to search for additional minable reserves.

4.2.1 Surface Sampling Program

A 25'x 25' grid overlaying the estimated mineralized zone of the Rising Fawn will be the pattern for surface sampling. Each intercept on the grid is a sample point (See surface map 4.2). A total of 215 samples will be taken of approximately 15 pounds each, properly sacked, numbered and labeled. For grade determination of each square of the grid, the four (4) assays of each corner of the individual squares will be arithmetically averaged and the result is the grade of the square.

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5.0 MINING

5.1 Introduction

The potential mine area was visited in early August 1987 to get a first hand impression of the country and area in particular in order to form an idea of the type of equipment that would be suitable to use for the mining operation.

An obstacle that will affect the mining operation to a certain extent is Highway 68, because of its close location to the steep slope on the south-eastern part of the hill which is in the center of the area to be mined. Special precautions will be necessary to prevent damages to the road and it is foreseen that minor traffic stoppages may be required while blasting and dozing on the upper portion of the hill.

The operation proper is envisioned as a relatively easy and efficient procedure and should be operational year round because of the good prevailing weather conditions on this region.

Mining plans were developed based on 20-foot horizontal slices which are also the heights of the mining benches. From the road level down, three 20-foot benches were designed to follow the mineralized zone downward to a physical limit imposed by Highway 68. A northwesterly extension of the mineralized zone is not likely as evidenced from the existing drill hole information. Present indications show the mineralized zone to dip rather steeply towards the highway and project under it.

5.2 Mining Plans

The first stage surface mining plans were developed on blown-up areas of ±1"=100' produced with a Ricoh copier and enlarger from a 1"=200" topographic sheet which covers the extent of the claims enveloped in this project. The enlarged area covers the potential mining zone and its immediate surroundings (See Figures 5.1 through 5.8). Since the main contour lines are spaced at 20-foot intervals the mining heights for the benches was likewise chosen to be 20 feet. This height is compatible with the recommended mining equipment selected.

Since mining is confined in large part to taking down the ridge on the Rising Fawn claim, it was divided into 20-foot slices using each cor-

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responding contour line as the bench elevation. Eight (8) benches were designed for the first stage.

In the second stage, three (3) benches for excavation, (See Figure 5.9) were designed extending downward to a critical depth at elevation 2340-feet where the highway becomes a limiting factor which prevents additional benching and further extension of the pit units. Figure 5.10 shown the 2340-Bench (Ultimate pit) while figures 5.11 and 5.12 show benches 2380 and 2360, respectively.

At elevation 2340, additional extraction of the mineralized zone can be accomplished by underground stoping methods. Prior to proceeding with plans for stoping, it would be advantageous to drill an inclined hole in the center of the mineralized zone which extends under the highway to check the continuity and intensity of the zone, so as to justify additional investment in capital for underground development.

Below elevation 2400 there is evidence of water, which will be a problem that will have to be resolved once mining reaches to this point.

For the open pit mining in stage one, four (4) cross-sections were prepared, which traverse the ridge at irregular distances between these sections. The reason for the irregular distances between sections is that the pattern of profiles chosen to traverse the ridge were originally selected by the geologist and in order to maintain a certain conformity the same profile locations were used (See Figure 5.13).

5.3 Tonnage Calculations and Grade

The mining tonnage rates were set at 500 ST of ore and 1000 ST of discard (waste) for 1500 ST total per day.

Tonnages claculated follow:

Bench No.	Ore	Waste	Total	W/O Ratio
2540	19,638	4,664	24,302	0.24:1
2520	49,480	14,494	63,974	0.29:1
2500	75,636	36,818	112,454	0.49:1
2480	87,632	101,293	188,925	1.16:1
2460	116,287	186,592	302,879	1.60:1
2440	83,966	226,922	310,888	2.70:1
2420	78,968	166,830	245,798	2.11:1
2400	70,805	150,773	221,578	2.13:1
2380	78,469	215,414	293,883	2.75:1
2360	69,306	217,580	286,886	3.13:1
2340	42,150	143,109	185,259	3.40:1
TOTAL	772,337	1,464,489	2,236,826	1.90:1

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tons of waste for 6 days. Total daily tonnage will be 1750 tons and will be mined during an 8-hour shift with 7-hour effective work.

Ore tonnages at a rate of 583 tons per shift will be dumped on a platform by the crusher. This material will be dumped into the crusher during the afternoon shift. For this purpose a front end loader will be required. This procedure will allow the maintenance for the plant and crusher to be done during day light hours.

The waste material will be hauled to the designated dump area and dumped at a pre-selected elevation (to be determined in the field) and advanced in a level manner. It is envisioned that, barring any unforseen situation, a second lift will be carried over the previous dump so as to accumulate this material in a reduced area. It is also possible that some of this material may be disposed of as fill for construction of diverse nature and be hauled away by interested parties, or in its effect the material could be crushed, screened and sold as aggregate. It is recommended that these and other concepts be explored further.

For the mining operation proper, it is expected that a large percentage of the crest to be mined will be rippable with the dozer with occasional drilling and blasting required. During actual blasting, being that Highway 68 is close by, it will be necessary to request the help from the Department of Public Safety (DPS) to control or stop traffic for short periods, to prevent any fly rock from causing possible damage or injury to vehicles and occupants. Also small piles of prepared black top material must be handy to repair any holes caused by fly rock.

Explosives and placing of these in the drill holes should be done on a contract basis with an explosives manufacturer. This procedure will eliminate the necessity to have explosive storage facilities on the site and in this manner eliminate many problems associated with this product.

6.0 METALLURGY AND PROCESS PLANT

6.1 Metallurgical Summary

The metallurgical test program was limited to samples obtained from the surface as there was no drilling program planned for this phase of development. In the absence of subsurface drill samples that might indicate to the contrary, it was assumed that the ore in the Rising

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Fawn ore body is relatively uniform and will respond metallurgically similar to samples obtained from the surface. This appeared on acceptable assumption as the Rising Fawn Adit was driven through the main vein at approximately the 2440 elevation while previous drill data indicated the vein surfaced at the 2540 elevation. Accordingly, two bulk samples were taken to provide a comparison between the surfaces and the adit (subsurface) types of material.

The first bulk sample was obtained by cutting 10-foot horizontal channels in four selected areas of the adit. These sample areas were selected in accordance with data obtained from an assay map of the adit in order to assure a composite bulk sample of suitable grade for testing. One of the four samples was subsequently discarded as too low in gold content. The three remaining samples were then composited to provide a test sample averaging 0.052 and 0.77 ounces/ton gold and silver respectively.

The second bulk sample was obtained by taking twelve surface samples in a three line grid across the area previously outlined as part of the ore body. Individual assays ranged from a low of 0.007 to a high of 0.852 ounces per ton of gold. The weighted average of these twelve original samples was 0.091 ounces/ton of gold but subsequent assays and test results gave an average assay of 0.064 gold and 0.15 silver. As the 0.852 assay was extremely high it is assumed it was due to a nugget effect that occurred during sample preparation. Assuming all other samples correct, this single sample would still be in the range of 0.5 ounces per ton, a respectable assay, in order to produce the composite test head of 0.064 ounces/ton.

Although this surface sample is very encouraging when compared to the calculated grade of the deposit, it must be viewed with caution at this time as emphasis was placed during sampling on obtaining a metallurgical sample of suitable grade and character and not upon obtaining a sample representing a given area. Sampling of the entire surface in a grid pattern should be undertaken to better define the ore body limits at the surface, as this cannot be adequately defined from available drill data (See Section 5.3 of this report).

The composite samples from the adit and the surface were tested separately in parallel in order to note any significant differences in mineral between the two areas. Testing on each consisted of a series of bottle (agitation) leaches and column (simulated heap) leaches.

Arabian mine property, Mohave County, Arizona: Loss of mineral value due to expansion of a State Highway right of way

December 1991

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SUMMARY

The Arabian mine property, owned by Thomas F. Mulherin consists of three patented lode claims located 8 miles east of Bullhead City in Mohave County, Arizona. Two of the claims are crossed by State Route 68, which the Arizona Department of Transportation is in the process of widening. To allow space for highway improvements the Department is proposing to increase the width of its right of way through the claims from 100 to 200-220 feet, and to extend its rights downwards to 100 feet below surface.

The expanded right of way would have a detrimental impact on a gold deposit, the Rising Fawn, on the Arabian property. Despite its location close to the highway, the Rising Fawn could presently be mined by open pit at a satisfactory profit as has been shown in a previous study and verified here. Expansion of the right of way would affect the deposit in three ways:

1. A small portion of the deposit would fall within the right of way and be lost to the property owner.
2. Expansion of the right of way would restrict the width of the open pit and make more than half of the presently workable ore unmineable.
3. With the above losses of mineable material, the remaining, physically mineable ore would become uneconomic to mine.

The net result would be a complete loss of the value of the whole deposit.

The Rising Fawn deposit contains 800,000 tons ore grading 0.044 oz/ton gold. It is amenable to open pit mining and heap leach treatment which would yield 75% of the contained gold. The capital cost to develop a mine would be $1,912,000 and the total operating cost $5,912,000. Total revenue from 26,400

ounces of gold recovered and sold at $360 per ounce would be $9,504,000. Gross profit from project would therefore be $1,680,000. This can be considered a good rate of return for the two year life of the mine.

The figure of $1,680,000 therefore represents the gross financial loss to Mr. Mulherin if the right of way is expanded as proposed.

ARABIAN MINE PROPERTY, MOHAVE COUNTY, ARIZONA: LOSS OF MINERAL VALUE DUE TO EXPANSION OF A STATE HIGHWAY RIGHT OF WAY.

INTRODUCTION

The Arabian mine property, owned by Thomas F. Mulherin of Glenolden, Pennsylvania, consists of three patented lode claims, namely Perry, Rising Fawn and Resaca (Mineral Survey number 3255). The claims are located in Section 20 of T21N, R20W in Mohave County, Arizona, about 8 miles east of Bullhead City. Two of the claims, Rising Fawn and Resaca are crossed by State Route (SR) 68 which links Bullhead City with Kingman to the east. Both claims contain gold mineralization, which, for short periods, supported small scale mining.

The Arizona Department of Transportation is making improvements to SR 68 and, as part of the overall plan, is proposing to increase the width of its right of way across the Rising Fawn and Resaca claims from 100 feet to 200-220 feet (wider in one short stretch), and to extend the right of way to a depth of 100 feet below surface. The existing right of way carries no sub-surface rights. Some of the gold mineralization falls within the proposed right of way and in addition, the mineability of adjoining mineralization will be adversely affected by the proximity of the proposed right of way. If the proposal is implemented the mineral value of the two claims will be reduced and, in order to make a realistic claim for compensation for the loss, Mr. Mulherin has requested that I make an evaluation of what the loss would be. This I agreed to do and the report following describes the affected gold deposit, the possible mining operation, and shows what Mr. Mulherin's financial loss would be and how it was calculated.

Units of measurement used are those which are standard in the American mining industry. Two abbreviations for units have been used in the report: "ton" refers to short ton and "ounce" refers to Troy ounce.

EXISTING SITUATION

Although gold mineralization occurs in several parts of the claims the detrimental impact of the expanded right of way will affect the best defined and largest of the deposits. This deposit, the Rising Fawn, occurs mainly on the Rising Fawn claim and extends a short distance into the Resaca.

It is well exposed along a steep sided ridge trending almost parallel to the highway on the northwest side. The deposit is tabular in shape and dips fairly steeply to the southeast underneath the highway. The gold grade of the deposit dictates that it can be mined economically only by the open pit method. Although the position of the existing right of way imposes a limit to the extent of an open pit mine, there is, nevertheless, enough space between the right of way and the surface exposures of the deposit to allow for an operation sufficiently large to be economic.

MINERAL VALUE LOSS

The proposed expansion of the right of way will adversely affect the Rising Fawn deposit in three ways:

1. A small part of the deposit will fall within the boundaries of the proposed right of way and will thus be acquired by the Department of Transportation.
2. Because the new right of way boundary would be closer to the surface exposure of the deposit open pit mining would be hampered, and a substantial portion of the deposit, now mineable, would become

physically unmineable.

3. With the above losses of mineable material, the amount of physically mineable ore remaining would be insufficient to make an economically viable operation.

The net result, therefore, is a loss to Mr. Mulherin of the full value of the deposit.

The full value of the deposit is considered to be the profit which could be made by developing a mine, mining the ore, and recovering and selling the gold. To reach a figure for this value I have recalculated current mineable reserves and made projections of costs and returns of an appropriate mining and processing operation, to derive the profit that could be made.

BACKGROUND

The Arabian gold occurrences have been known since before 1900. Intermittent, small scale, underground, mining took place on the property up until the mid 1930's, but, as far as can be determined, only a small amount of the ore was mined from the Rising Fawn deposit; most came from another similar deposit to the northeast on the same structure.

Geologically, gold on the Arabian property occurs in a breccia along the fault contact between Precambrian granites to the northwest and Tertiary volcanics in the hanging wall to the southeast. The breccia consists of silicified fragments set in a matrix of quartz and minor adularia. It is almost free of pyrite and no other sulfides occur. Gold seems to occur as very small grains disseminated through the quartz. On a district scale the Rising Fawn type of fault is an important ore control and provides the host for many other gold deposits and small mines.

The reason that only a small amount of ore was mined from the Rising Fawn is that the gold, for the most part, is disseminated through a relatively large volume of breccia, in contrast to the deposit a short distance to the northeast where the gold is concentrated in a narrow structure, is much higher grade, and was economic to mine underground. With increasing gold prices in the 1970's the disseminated gold of the Rising Fawn became attractive as a target for low cost, open pit mining. Several companies have since looked at the property from this point of view and have done exploration and other testing of the ore under agreement with the owner. The companies include Houston Oil and Minerals, Meridian Land and Minerals Company, Sutton Resources Ltd., Crown Resource Corporation, and Westar Holding Corporation.

The most extensive and useful work was done by Meridian and Westar. In 1982-83 Meridian drilled 16 holes in the Rising Fawn, calculated ore reserves, but decided that the deposit was too small to meet the company's minimum size requirements. In 1987 Westar, while holding a lease on the property had a detailed mining economics analysis done on the Rising Fawn by Mountain States Mineral Enterprises Inc. of Tucson.* This showed the economic viability of an open pit mining operation with gold recovery by the heap leach process. Westar wanted to proceed with a mining operation. They made a determined effort to raise funds, but because they were relative newcomers to mining, and because gold prices were falling in the late 1980's, they were unsuccessful and were eventually forced to drop the lease.

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* Arabian mining project: Phase 1 development report prepared for Westar Holding Corporation. Mountain States Mineral Enterprises Inc. Sept. 24, 1987.

EVALUATION

The results of work by Meridian and Mountain States form the basis of the present evaluation of the Rising Fawn deposit. Some assumptions have been changed and after a review of other other similar operations some of Mountain States cost figures have been modified. Ore reserves have been recalculated in order to verify the figure reached by Mountain States.

Ore Reserves

Meridian Land and Minerals Company drilled 14 reverse circulation and two core holes into the Rising Fawn deposit. Samples were taken in 5 ft. lengths and all were assayed by Skyline Labs Inc. in Tucson. For assay purposes a 10 gram portion was taken from each sample, and the gold and silver content determined by atomic absorption equipment. Results show that the deposit extends for at least 480 feet along strike and at least 600 feet down dip. The amount of mineable material was calculated by Meridian as 530,000 tons grading 0.06 oz/ton Au. The cut-off grade they used is not available but must have been relatively high.

Using the same information, Mountain States calculated the reserve as 772,000 tons grading 0.0452 oz/ton Au. A strike length of 610 ft. was assumed and the mineable tonnage calculated from the highest point on the outcrop ridge, 2,563 ft., to a lower limit at 2,340 ft., about 60 ft. below highway level. The stripping ratio was stated as 1.9:1, waste to ore. The method of calculation and cut-off grade are not specified in the report.

In the present recalculation the Meridian drill results were again used. Additional information used came from results of a surface sampling survey done in 1989 and

supervised by the author. This survey consisted of 42 samples taken along five lines crossing the outcrop of the deposit. Each interval sampled was 10 ft. long by 5 ft. wide and the sample consisted of rock chips taken within the rectangular panel. Locations and gold values of the samples are given on a map following (in pocket).

The ore reserve was calculated by a geometric method. Five cross sections were constructed to coincide as closely as possible with the portions of the drill holes and sample lines. The area of the cross section of the deposit in each section was calculated, and the corresponding volume found by multiplying the area by the sum of half the distances to adjacent sections. At the northeast end of the deposit the ore was assumed to extend 50 ft. outward beyond the last cross section, and at the southwest end a 40 ft. extension was assumed. This gave a total strike length of the ore of 570 ft. Volume of ore was converted to tonnage using a factor of 12.5 cu. ft. to 1 short ton (or specific gravity of 2.59).

In the central part of the deposit ore was calculated down to the 2,300 ft. level. This is considered the lower limit of open pit mining because of the constraint caused by the highway right of way.

For calculation of the ore grade the assays from Meridian's drilling and those from the 1989 surface sampling were used. To define the outer limits of the ore a cut-off gold grade of 0.02 oz/ton was used. The averages of grades within these limits were calculated for each drill hole and are shown on the cross sections following. Several gold values of less than 0.02 oz/ton occur within the limits of "ore" in most drill holes. It is normal practice to include some of these low values within ore. Probably more than normal have been included here because the assay method, using

only a 10 gram portion of sample, is subject to inaccuracy and liable to give low results, and therefore some of the low values may in fact be underestimated. This is backed up to some extent by the fact that the average of the 42 surface samples, the assays for which are based on a 60 gram sample, is significantly higher than the average for the drill results.

The total reserve in the Rising Fawn deposit was found to be 821,700 tons grading 0.044 oz/ton Au. The amounts for the individual sections are as follows:

Sect.	BB′	79,300 tons	0.037 oz/ton Au
	CC′	191,600 "	0.040 " "
	DD′	275,300 tons	0.048 " "
	EE′	183,500 "	0.048 " "
	FF′	92,000 "	0.037 " "

The stripping ratio necessary to mine this amount of ore was found to be 1.5:1, waste to ore.

Ore reserve calculations confirm the figures arrived at by Mountain States. The slightly higher tonnage reached here is due to mining being assumed possible to a slightly deeper level. The grade figure is essentially the same as concluded by Mountain States. The higher stripping ratio calculated by Mountain States results from the adoption of a very conservative, low angle pit slope. A slightly steeper slope and lower stripping ratio are almost certainly safe to assume.

Mining

Mountain States has produced detailed plans for an open pit, with very conservative pit wall slopes, that can be excavated safely within the constraints of the existing right of way. A waste dump has been planned just beyond the northern limit of the pit and will provide short haulage distances and low hauling costs. For this study it has been

assumed that mining could safely take place with slightly steeper pit slopes, which will increase the mining depth attainable and slightly decrease the stripping ratio.

Gold Recovery

The only economic method of recovering gold from the Rising Fawn deposit is by the heap leach process. A number of column and bottle leach tests have been carried out on the ore by Mountain States, and the test procedures and results are fully documented in their report for Westar. The conclusion reached was that for optimum recovery, the ore would have to be crushed to a particle size of -10 mesh (0.078 inches) and then agglomerated before leaching by sodium cyanide. Column leach tests on two samples crushed to this size gave gold recoveries, after 18 days leaching, of 91 and 77%. It was concluded that this indicated a production scale recovery of 75% of the gold. Reagent consumption was found to be very low: 0.85 lb/ton of ore for sodium cyanide and 0.8 lb/ton ore for lime.

Mountain States has drawn up detailed plans, with costs, for the processing plant and leach pad to be located directly northwest of the Rising Fawn deposit on adjacent property. The natural slope of the area is ideal for drainage of leach solutions from the pad, and the crushing plant can be located very close to the mine, thus keeping hauling distance to a minimum.

Capital and Operating Expenditures

In Mountain States' economic analysis it was assumed that a mining company would carry out all aspects of the Rising Fawn project itself, and provide the capital for all equipment and mine development. It was also assumed that operations would take place over a four year period at a mining and

processing rate of 180,000 tons of ore per year. However, in practice, it is much more likely that the operating company would prefer to contract out the mining and perform only the processing itself. In addition the company would probably decide to cut costs by carrying out the whole operation in a much shorter time. Assumptions adopted here are therefore that mining would be done by a contractor and that the whole operation would be completed in two years. Costs outlined by Mountain States are realistic and are used here with slight increases, especially in salaries, to account for inflation. It should be noted that most prices quoted by Mountain States are for used equipment, a normal practice for this type of operation.

The advantage of contracting out the mining for a small orebody is that it greatly reduces the capital outlay. It also reduces mining costs because a contractor with the right equipment can mine the deposit out rapidly, thus reducing unit costs. For the Rising Fawn the ore, which would be mined out in a 6-12 month period, would be stockpiled near the crushing plant and fed through the system at its capacity rate over a two year period.

Mining of ore and waste at the Rising Fawn will be relatively simple and low cost for several reasons including: 1) at least one third of the material is above the level of the plant and waste dump, and will be hauled downhill after mining, 2) all haulage distances are short, 3) the orebody occurs in one well defined, tabular block, 4) pit wall stability should not be a problem. It should be possible to arrange a contract to mine ore and waste at a rate of 5,000 - 10,000 tons per day for about $1.00 per ton, but to be more conservative a figure of $1.20 per ton has been assumed.

The processing plant, its layout, construction, operating procedure, and capital and operating costs have been fully and clearly described by Mountain States. It consists essentially of a series of crushers, an agglomerator, a heap stacking system, leach pad with solution ponds, a Merril-Crowe gold recovery plant, and a small furnace for smelting gold bearing precipitates. The most significant feature is a third stage crusher (roll type or equivalent) to achieve a fine particle size of around 10 mesh.

The only change proposed here is an increase in production rate. Mountain States assumed that the crushing and agglomerating system, with a capacity to treat 80 tons per hour, would operate for 8 hours per day, 6 days per week to achieve an annual throughput of 180,000 tons. It is here proposed that the plant should be operated on a two 10 hour shift per day basis to ensure a rate of 400,000 tons per year. This will require some additional workers.

Some pre-development expenditures are necessary and are added here to the capital costs. These expenditures are for items such as ore definition drilling, metallurgical work, mine design, environmental permiting, and acquisition of land to be used for plant construction. Pre-development costs can be summarized as follows:

Ore definition drilling	$ 75,000
Drilling for metallurgical samples	25,000
Metallurgical testing	20,000
Surveying and map preparation	10,000
Mine design	50,000
Environmental and permiting	50,000
Land lease agreement	60,000
Total	$ 290,000

The capital costs can be summarized as follows:

Leach pad. Site preparation, base, liners, pumps, piping to treat 800,000 tons in one layer		$ 692,000
Process plant. Crushers (3) and refurbishment, site preparation, wiring, piping, agglomerator, front end loader, stacker		435,000
Gold recovery plant. Site preparation, building, equipment and plant including assay lab		135,000
Power distribution system		20,000
Water service equipment and well drilling		14,000
Communications (phone system)		5,000
Miscellaneous.		
Water truck and pick-ups	40,000	
Shop building	6,000	
Fencing	10,000	
Utility tractor	40,000	
Traffic control equipment	6,000	
	102,000	102,000
Construction Management		50,000
Pre development costs		290,000
Reclamation		150,000
Sub total		1,893,000
Contingency 10%		189,000
Sub total		2,082,000
Less: sale price of salvageable equipment		170,000
TOTAL		$1,912,000

Operating costs for mining and processing 800,000 tons of ore and removing 1,200,000 tons of waste are summarized on a "per ton ore" basis as follows:

	Cost per ton ore
Contract mining: mining 2.5 tons material to recover 1 ton of ore, at $1.20 per ton	3.00
Processing:	
Labor (see details following)	1.31
Materials and supplies (see details following)	1.84
Rental Equipment: generators, trailers for office, changing, storage	.15
Assaying and refining	.17
Consulting engineer	.08
Office expenses	.05
Travel, insurance	.14
Miscellaneous	.65
Total	7.39

The annual pay rates for labor are broken down as follows:

Manager/mining engineer	1	$50,000
Assayer/furnace operator	2	60,000
Millwright	1	32,000
Crusher operator	2	60,000
" helper	2	32,000
Equipment operator leach pad	2	60,000
Process plant operator	3	72,000
Process plant swing operator	1	22,000
Clerical	2	30,000
Sub total		$418,000
Fringe benefits at 25%		105,000
Total		$523,000

Based on 400,000 tons mined per year the labor cost is $1.31 per ton.

Annual costs for materials and supplies can be broken down as follows:

Operating and maintenance	$ 160,000
Sodium cyanide	275,000
Lime	15,000
Portland cement	87,000
Fuel oil, mainly for generators	200,000
Total	$ 737,000

Cost per ton of ore: $1.84

ECONOMICS

Assuming that 800,000 tons grading 0.044 oz/ton Au is mined and processed with a recovery of 75% of the gold the amount of gold recovered, out of a contained total of 35,200 oz, is 26,400 oz. If the recovered gold is sold at $360 per ounce total revenue is $9,504,000.

The costs of the operation are made up of a capital cost of $1,912,000 and operating costs of $7.39 per ton or $5,912,000, giving a total of $7,824,000.

The gross profit remaining is $1,680,000.

The gross profit at different gold prices is as follows:

Gold	$360	per	ounce	gross profit	$ 1,680,000
	380	"	"	"	2,208,000
	400	"	"	"	2,736,000

The cash operating cost per ounce of gold is $224. Including capital costs the price of gold needed for a break-even operation is $297 per ounce.

FINANCIAL LOSS DUE TO EXPANSION OF RIGHT OF WAY

The location of the proposed, expanded right of way is shown on maps and sections following. The cross sections

illustrate how some ore will be incorporated in the proposed right of way, and how the rest of the ore will be affected by it.

The only ore to be incorporated in the proposed right of way occurs at the southwest end of the deposit, and can be seen in cross section BB'. The amount incorporated is estimated at 54,200 tons.

The mining of the whole deposit would be adversely affected by the location of the proposed right of way. The southeast edge of the pit alongside the right of way, would have to be moved northwestward by at least 50 feet. Where the new pit edge falls on the steep ridge slope considerable mining difficulties will arise, especially in regard to preventing boulders from falling down on to the State's right of way and possibly on to the repositioned highway. In addition to this, because the southwest end of the ridge will become unmineable a slope problem will arise on the southwest end wall of the pit. This, together with the required narrowing of the pit, will greatly restrict the depth of mining possible for the rest of the deposit. It would result in the greatest depth attainable being to the 2,360 ft. level, and this only on Section FF'.

Taking the above affects into account the amount of the deposit, which would be rendered unmineable in each section is as follows:

Cross section	BB'	Unmineable	79,300 tons
"	CC'	"	126,600 "
"	DD'	"	169,500 "
"	EE'	"	64,400 "
"	FF'	"	25,300 "
Total unmineable			465,100 tons

Adding unmineable to acquired material gives a total of 519,300 tons and leaves 280,700 tons of the original ore which would still be physically mineable. Revenue from mining this remnant would be (gold $360 per ounce) $3,326,000. Although capital costs for an operation to mine this would be reduced slightly, the unit operating costs would increase substantially. Total costs would be in the range of $4 to 4.5 million showing that mining would not come close to economic viability. This remaining ore therefore becomes valueless, and in fact can no longer be termed "ore".

In conclusion, it can be clearly stated that, because of ore acquired by the State and further ore made physically unmineable by the proposed expanded right of way, the remaining mineralization becomes valueless. In other words the value of the Rising Fawn will be totally lost to Mr. Mulherin if the proposed highway project proceeds as planned.

The financial loss, based on a gold price of $360 per ounce, can be categorized as follows:

Loss due to direct acquisition of minerals within the proposed right of way	$	113,800
Loss due to minerals rendered physically unmineable	$	976,700
Loss due to minerals rendered valueless	$	589,500
TOTAL	$	1,680,000

R. Gregus - fmh

Certificate of Author

R. Fergus Graham
2565 Miller Street
Lakewood, CO 80215

I, R. Fergus Graham certify the following:

1) I am a consulting mining geologist with an office in Lakewood, Colorado.

2) I received a B.Sc. in Geology in 1962 from Queens University, Northern Ireland. I received an M.Sc. in 1967 and a Ph.D. in 1970, both in Geology from the University of Western Ontario, Canada.

3) I have practised as a geologist in the mining industry since 1970.

4) The foregoing report is based on reliable information gathered by established and professional groups in the mining industry.

5) I have no financial interest in the Arabian property, nor do I expect to receive any such interest.

6) I consent to the use of this report by Mr. Mulherin in his effort to secure compensation for mineral loss on the Arabian property.

~~OFFICE MU.6440~~
RESIDENCE OX.7694

G. CLEVELAND TAYLOR
MINING ENGINEER

618 N. Bedford Dr
Beverly Hills

~~624 H.W. HELLMAN BLDG.~~
~~LOS ANGELES, CALIF.~~ November 18th, 1932

PRELIMINARY REPORT ON THE ARABIA PHILADELPHIA GROUP OF MINES

L O C A T I O N

The Arabia Philadelphia Group of mines is situated in the Union Pass mining district, Mojave County, Arizona, about fifteen miles west from the Union Station on the Chloride Branch of the Atchison, Topeka and Santa Fe Railroad, and about twenty-five miles west from Kingman, the County Seat of Mojave County.

The nearest towns are Oatman and Goldroads, which are about ten miles south and in the same river range of mountains. While Oatman is the nearest town, the Arabia is best reached by way of Kingman, as the Kingman-Katherine highway passes directly across the property, the Katherine Mine being located about seven miles north of the Arabia and near the Colorado River.

H I S T O R Y

While no attempt will be made in this report to give the history of the district, it is well to recall here that many millions have been produced from the mines of this area, and from ores similar in character to the Arabia Philadelphia ore. Four of these important producers are the United Eastern, Tom Reed, Goldroads and Katherine.

The major portion of the development of the Arabia Philadelphia was done about twenty years ago by the Mines Company of America, a large English Company which operated extensively in Mexico for many years prior to their development of this property. This work was done under an option contract, and when the development reached its present stage I am informed that the English company attempted to get certain alterations in their contract and attempted to force this change of contract by removing the equipment and ceasing work. The dispute which then arose resulted in the English company losing the property entirely.

There has been no important operation on this property since the Mines Company ceased work. The owner of the Philadelphia Group did install a small two stamp mill and treated some high grade surface ores with this plant.

AREA AND TITLES

The Arabia Group consists of three patented claims --The Perry, Rising Fawn and Resecca. The Philadelphia consists of three unpatented claims--The Philadelphia, West Philadelphia and the Water Claim.

The two groups are adjoining, but under different ownerships. Both groups are now held by a four years lease, with option to purchase, by G. Cleveland Taylor of Beverly Hills, California.

The full purchase price of the entire property is $120,000.00 to be paid as follows: $4,000.00 on June 16th, 1933, and the balance divided into six equal payments to be paid each six months period from December 16th, 1933, until completed on June 16th, 1936.

The lease provides that a fifteen percent (15%) net royalty be paid on all ores shipped or milled during life of contract. By net royalty is meant the net returns after deducting all transportation and treatment costs. This will be applied on the purchase price of the property.

GEOLOGY AND ORE DEPOSITS:

The geology and ore deposition at the Arabia Philadelphia Mines is similar in genesis to the larger mines of the Oatman district.

The basal complex of the immediate district is Pre-Cambrian granite, intruded by many dikes and vulcanic necks of rhyolite and andesite, the source of the many flows which cover the surrounding area.

The ore zones consist of shattered zones within one of these rhyolite dikes. This dike is several hundred feet wide and strikes approximately north and south, with an apparent dip to the East of about 55 to 70 degrees.

The strike and dip of the ore zones is approximately that of the dike.

The main outcrop upon which most of the work has been performed consists of a zone of shattered rhyolite from twenty-five to one hundred feet wide. This material has been permeated by silicious and calcitic solutions which have silicified the fragments of rhyolite and filled the interstices with veinlets of quartz and calcite.

If the genesis of the Oatman district holds true, the mineralizing solutions were first calcitic, becoming later more and more silicious. This huge outcrop stands out today as a cliff nearly a mile in length and up to 100 feet in heighth from the valley wash, due to the wearing away of the softer hanging wall rock.

The gold and silver values are found in lenses along this silicified zone. The ore of highest tenure seems to occur in a central position, with the values lowering as the margins of the silicified material are reached. The width that can be classified as ore will be determined by the cost of recovering the precious contents. The walls are really economic or assay walls.

These lenses of commercial ore may occur anywhere along this fissured zone. This is evidenced by the fact that superficial work has disclosed values at numerous places along the outcrop where no important development work has been done as yet.

WATER AND FUEL

Mr. A. B. Richmond, formerly engineer for the Mines Company of America, informs me that the present mine workings will furnish approximately thirty-five thousand gallons of water each twenty-four hours,and further states he expects this quantity to be increased by further sinking and drifting. As thirty-five thousand gallons per 24 hours is ample for the operation of a 100 ton milling plant, ample is assured.

As there is no fuel in the district, power must be generated by the use of fuel oil from California points,and we are informed that the Katherine mine is now delivering 28 gravity oil in carload lots at Kingman for 5½ cents per gallon.

BUILDINGS AND EQUIPMENT

There are sufficient buildings now on the ground for immediate needs, say for a production of around fifty tons of ore per day, and consist of: a power house, a blacksmith shop, a dining room and kitchen, two bunk houses, an assay office, and two small houses and also an office building. The main shaft has a small headframe over it and there is also a 50 ton ore bin in place and ready for use.

The machinery on the property consists of a 25 HP F.M. gas hoist good for a 1 ton skip; one 12 x 12 compressor, one duplex water pump good for 100 G.P.M. and a 1 ton skip. There are several good mine cars and also miscellaneous mine rail and pipe in place in the mine, all of which is good.

The writer has inspected a mining plant of machinery now for sale and located about forty miles from The Arabia Philadelphia mines. This equipment is priced at below 25% of original cost, and, as most of it has had less than two years use and is in good condition, it would be ideal for present needs.

By purchasing local equipment and adding to present plant, $5,000.00 will cover the needs for a development campaign. The

additional equipment needed is either an engine to drive compressor now installed, or an available portable compressor; 4 air drills, drill steel, drill sharpener, 1 small truck, assay office, shop tools, etc. etc.

DEVELOPMENT

Development on the property consists of numerous open cuts, tunnels and shafts, and much of this work was placed without an idea of proper development and with the sole idea of doing so much work to comply with the laws regarding annual assessment work.

While much of this work done is absolutely worthless from the viewpoint of proper development, on the other hand some of it is well placed and will be well to follow up. This development follows the bold outcropping of the vein for over a mile in length and good values are found at a number of places, some of which will probably develop into important ore sheets. I will not attempt here, however, to describe all of this work or the ore showings in detail, but will confine detail to the developed ore sheet and the mine development in this immediate area and which is shown on accompanying assay maps.

The R-A Shaft This shaft was sunk by the Mines Company of America and their assay map shows only a few good samples near the top and a report made in 1919 by A. B. Richmond states "The surface of this shaft gave an average of $54.00 gold and 4 ounces silver across a width of 7 feet, but as shaft was carried down it seems to have been driven off the ore shoot and no cross cuts have been driven to determine just what has happened."

When the mine was put in operation by the writer in September, this shaft was found to be partly filled with dump material which had originally come from the shaft in the sinking of it and which had run back into shaft where lagging had broken.

The back and face of 100' level at bottom of R.A. shaft shows no ore but a 12' sample cut along the west side of drift gave returns of $19.30. This suggested that filled portion of shaft might be in ore and as remaining portion of dump on surface assayed above twenty dollars the fill was then removed and 110 cars of fill hoisted from the shaft to make it available for sampling.

The 110 cars of fill averaged above $20 as hoisted. The shaft was sampled at 5' intervals and the average of these samples is $34.16 across an average sampled width of 5 feet.

As foot wall of ore does not show at any point in shaft two prospect holes of 40" each were drilled in foot wall of

shaft and average $20.00 per ton. This indicates at least a 9 foot width of good ore at this, the most southerly point where main ore shoot is opened.

The R-2 Shaft. This shaft is located about fifteen feet south of the north end line on the Resecca claim and was carried down to a depth of about sixty feet when a question regarding machinery removal caused the Mines Company to abandon the shaft and start one twenty-five feet to the north on the Philadelphia ground. This shaft is in main ore body but as there are no ladders it has not been sampled by the writer. The dump gives return of $11.73 with silver of 18 ounces and higher than at any other place in mine.

The Ph-2 Shaft. This shaft is the main shaft on the properties. It is an incline with an average dip of about 57 degrees and shows exceedingly good values down to a depth of two hundred feet, according to old Mines Company records, and also a report on the property by Mr. A. B. Richmond, mining engineer now with the Magan Copper Company. This shaft is now filled with water from a point thirty feet below the eighty foot level and I have been unable to sample this submerged area, but samples from the water level to the surface check closely the report of Mr. Richmond, who shows an average of $11.56 for 73 samples taken in this shaft and from drill holes into the ore, both above and below the shaft, (see accompanying map). Mr. Richmond states the shaft is out of the ore body from the two hundred level to the three hundred, which is the present bottom of this shaft. I have shown a rough sketch of the supposed position of this vein below the two hundred foot level, according to Mr. Richmond's interpretation of the geology. This is shown in small scale on accompanying map.

Rising Fawn Ore Body At a point some sixteen hundred feet south of the R.A. shaft, but on the same main vein, a favorable looking outcrop was found and a line of shallow holes were drilled and blasted across this outcrop, and the resulting trench was carefully sampled in sections and a width of 36 feet of ore is shown which averages $7.32 per ton, mostly gold, See cross section of this ore body and the location of same on attached sketches. This ore can be very cheaply mined as it stands upaas a bluff. The actual footwall of the ore was not reached as it was too steep for sampling.

"E" Shaft Ore Another important new shoot is indicated 400 feet west of the R.A. shaft, where a six foot hole has been sunk where a line of rich float has been found and a nine foot face of ore is shown which is believed to be in place and which assays fifteen dollars across the nine feet. This is believed to be the same vein which has been cut at the breast of the long west crosscut shown on assay map. It is however about four hundred feet from this point and on the apparent strike of this vein, both on the surface and on the 100 ft. level, the surface between however is covered with wash.

ORE RESERVES

By reference to the accompanying assay map it will be seen that an ore shoot with a length of three hundred feet is indicated by the development on the 100 foot level, and my sampling of the ore exposures in this level and the three shafts shown. I calculate the average width of this ore body to be fully 12 feet, although it is shown to be wider than this in the crosscut under the R-2 shaft and in the PH-2 shaft and drill holes. Allowing for low grade spots, which may be left as pillars, I place the probable ore above the two hundred foot level as thirty thousand tons with an average value of $11.50 per ton, with silver calculated at thirty cents per ounce.

30,000.
$3.00.00

It may be observed that sample interval in R-A shaft is 5' and at other parts of mine 10'. In calculating the average value of the samples shown on assay map, I have therefore multiplied by only one half of widths shown in R-A shaft area and this gives an average of all samples as $14.65 per ton. This is the actual calculated average of all samples taken by me and in arriving at $11.50 per ton I have made a reduction of 20% as a factor of safety.

Thirty thousand tons, of course does not include any ore in the large deposit on Rising Fawn claim where the 36 foot width is shown and where shallow drilling will probably quickly put in sight a large tonnage of commercial ore which can be mined at a low per ton cost.

My own investigation of this property governs my conclusions as to tonnage and value of this main ore body, but it is well to mention here that the estimates of the Mines Company of America and also Mr. Richmond, check very closely with my conclusions.

I agree also with Mr. Richmond in that a comparatively small amount of further development work will put in sight from one to two times as much ore as is now credited. This probability of increased ore reserves applies to extensions of this ore sheet and to others which are now indicated, particularly on Rising Fawn claim at "E" shaft.

ESTIMATE OF PROFITS BY MILLING ARABIA PHILADELPHIA ORES AT KATHERINE MILL.

30,000 tons of ore at $11.50		$345,000.00
Est. 10% metallurgical loss	$34,500.00	
Mining, at $2.00 per ton	60,000.00	
Milling at $2.50 per ton	75,000.00	
Transportation at 70 cents per ton	21,000.00	
Royalty at 15% net	32,175.00	
Mine Plant cost and general expense	20,000.00	
		242,675.00
Total deductions (on 30,000 tons)		$102,325.00

ESTIMATE OF PROFITS BY BUILDING A 75 TON CYANIZATION PLANT AT ARABIA PHILADELPHIA MINE

30,000 tons of ore @ $11.50		$345,000.00
Est. 75 ton mill and power plant complete	$50,000.00	
Est. 10% metallurgical loss	34,500.00	
Mining at $2.00 per ton	60,000.00	
Milling at $1.50 per ton	45,000.00	
Royalty at 15% net	40,825.00	
Mine plant and general expense	20,000.00	
Total deductions		250,325.00
NET PROFIT (on 30,000 tons)		$ 94,675.00

CONCLUSIONS

The above figures indicate that in the consideration of the thirty thousand tons of ore now credited to the Arabia Philadelphia properties there is little difference in the ultimate profit from this ore, whether it is treated as custom ore in the Katherine mill with the extra cost of the seven mile haul to that mill, or whether a plant is built at the mine for the reduction of this ore.

The important difference, however, is that by treating ores at the Katherine mill the property can probably be placed on production at an earlier date. The Katherine mill is now closed as their available ore bodies for milling were reported to be depleted. The operators of this property are attempting further financing, I am informed, in order to equip the mill for treating custom ores from the Arabia and other mines, with the intention of going on a development campaign at the Katherine mine. If these plans are successful, then a local market for Arabia-Philadelphia ores may be had. If, however, these plans are not successful then the Katherine mill will, no doubt, be available for purchase or lease at a low price as this property is now in the hands of a trustee in bankruptcy and this trustee is reported to be anxious to dispose of the assets of the company to clear up an estate.

While the Arabia Philadelphia could go on ore production as soon as the additional equipment mentioned has been installed, I would recommend that development of the mine with a crew of six to eight men and for a period of from three to six months should precede production as the mine can be placed in much better shape and the ore bodies more completely blocked out in that period. It is believed by the writer that

the Katherine mill will then be available and the production and reduction of around 100 tons per day can then be started and continued.

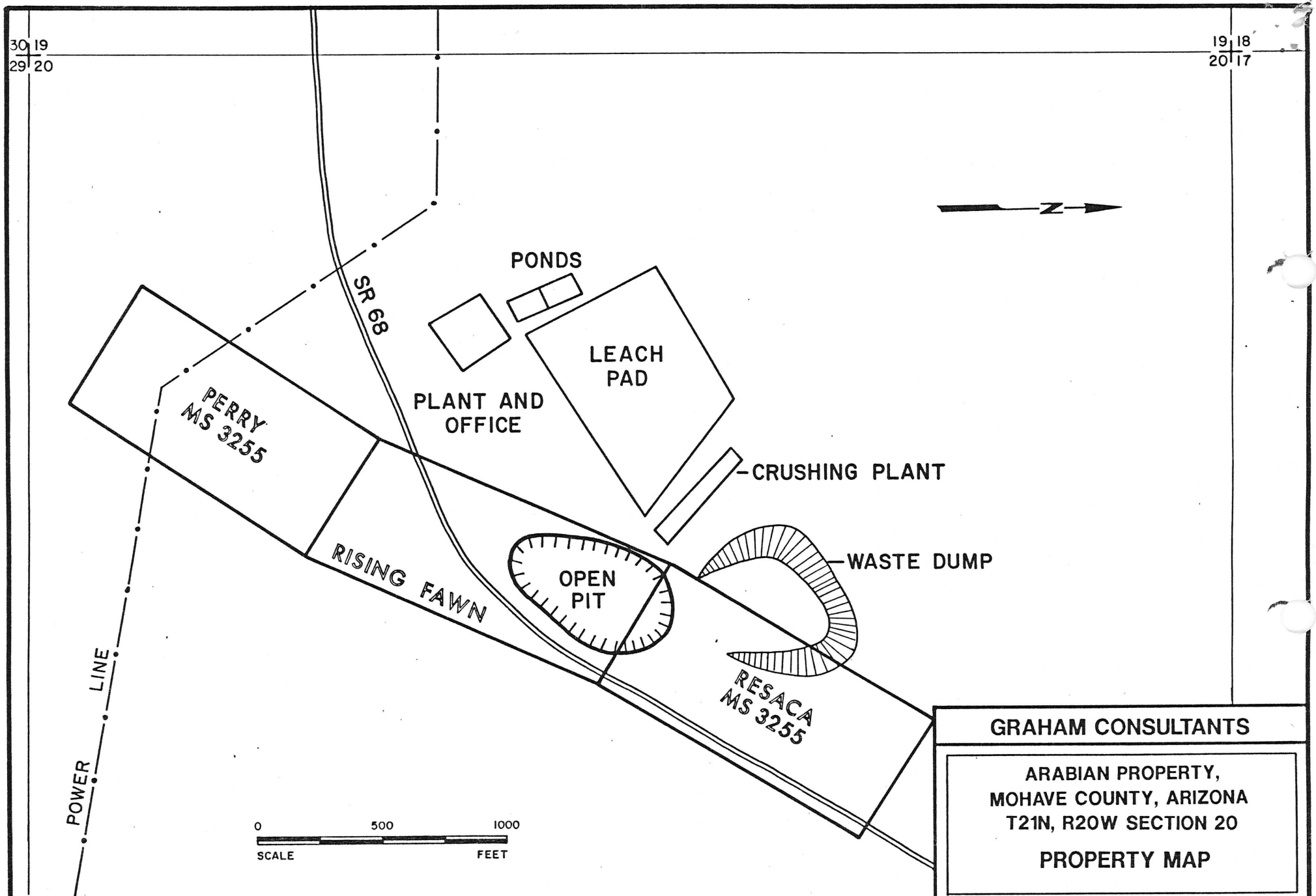
It has been shown that $5,000.00 will cover the cost of the additional equipment now needed for this development campaign. The monthly cost of this development after equipment has been installed will be about $2,000.00 per month.

In my many years of inspection of available mining properties from Alaska to Mexico and with all things considered, I regard this as one of the best mining opportunities that I have seen.

Respectfully submitted,

C. Cleveland Taylor

Mining Engineer



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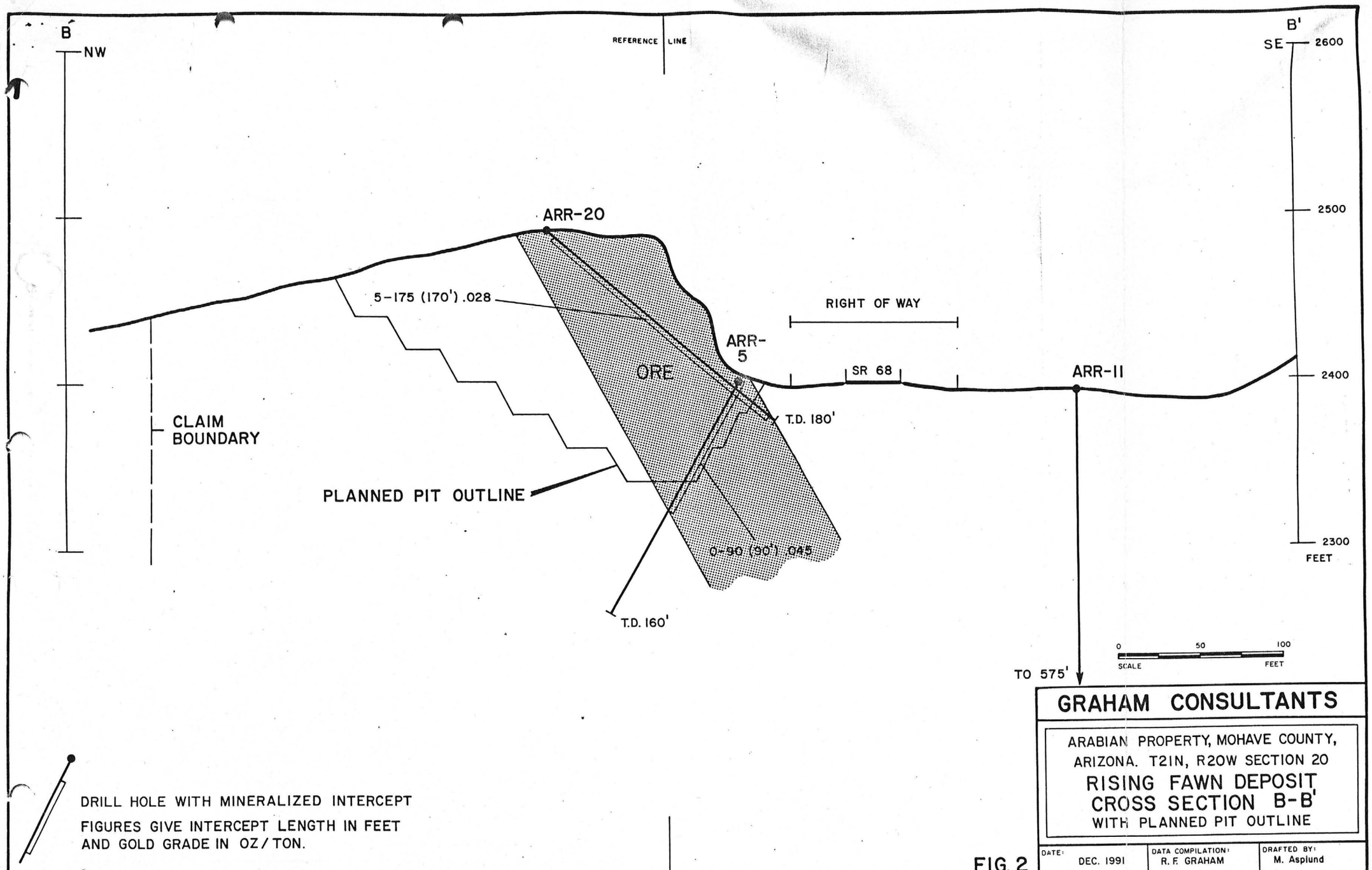
ARABIAN PROPERTY,
MOHAVE COUNTY, ARIZONA
T21N, R20W SECTION 20

PROPERTY MAP

Date:	Data Compilation:	Drafted By:
12/91	R.F. GRAHAM	M. Asplund

MINE SITE LAYOUT AFTER MOUNTAIN STATES MINERAL ENTERPRISES INC.

FIG. 1



DRILL HOLE WITH MINERALIZED INTERCEPT

FIGURES GIVE INTERCEPT LENGTH IN FEET AND GOLD GRADE IN OZ/TON.

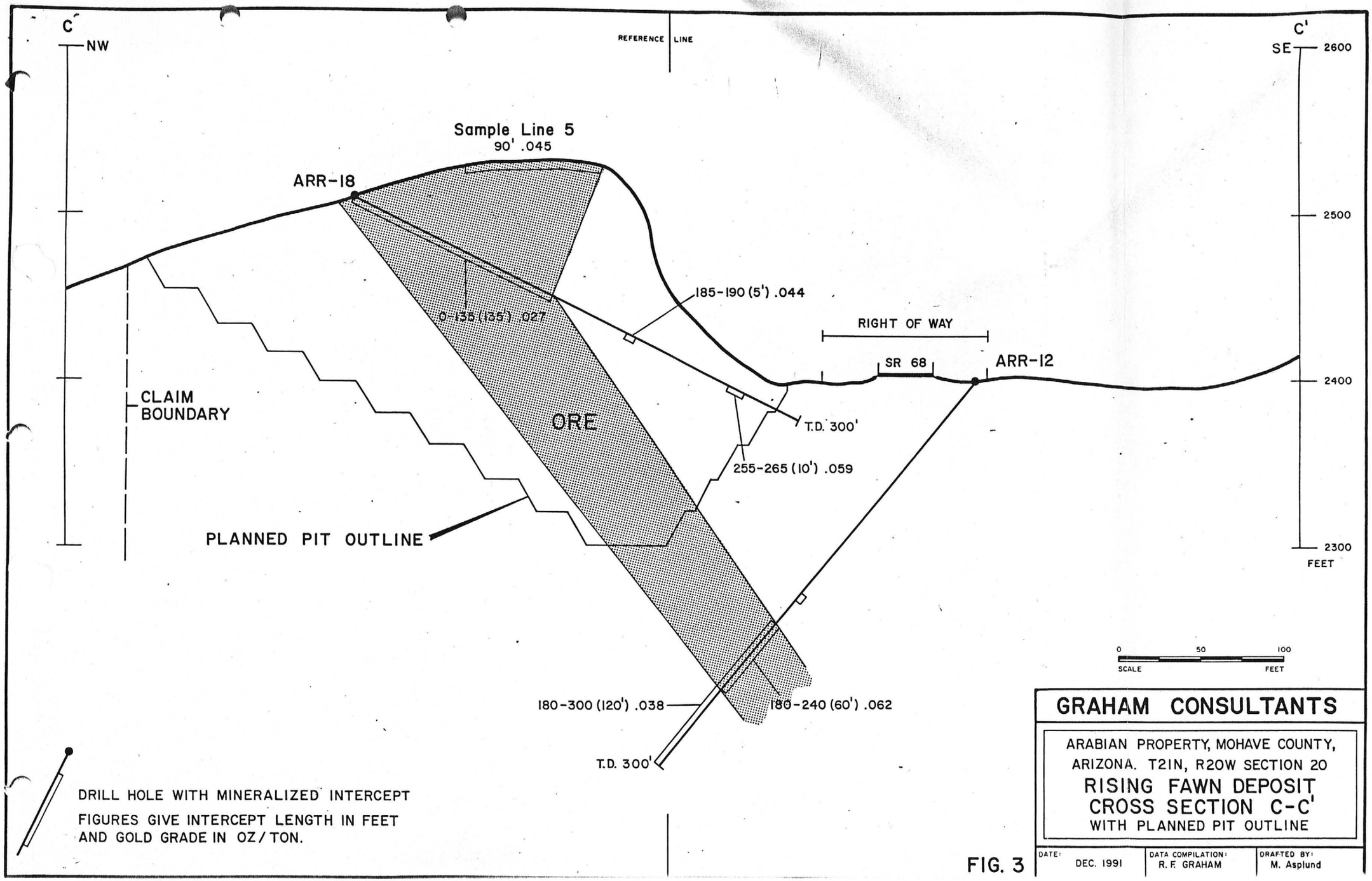
FIG. 2

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT
CROSS SECTION B-B'
WITH PLANNED PIT OUTLINE

DATE:	DATA COMPILATION:	DRAFTED BY:
DEC. 1991	R. F. GRAHAM	M. Asplund



GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT CROSS SECTION C-C'

WITH PLANNED PIT OUTLINE

DATE:	DATA COMPILATION:	DRAFTED BY:
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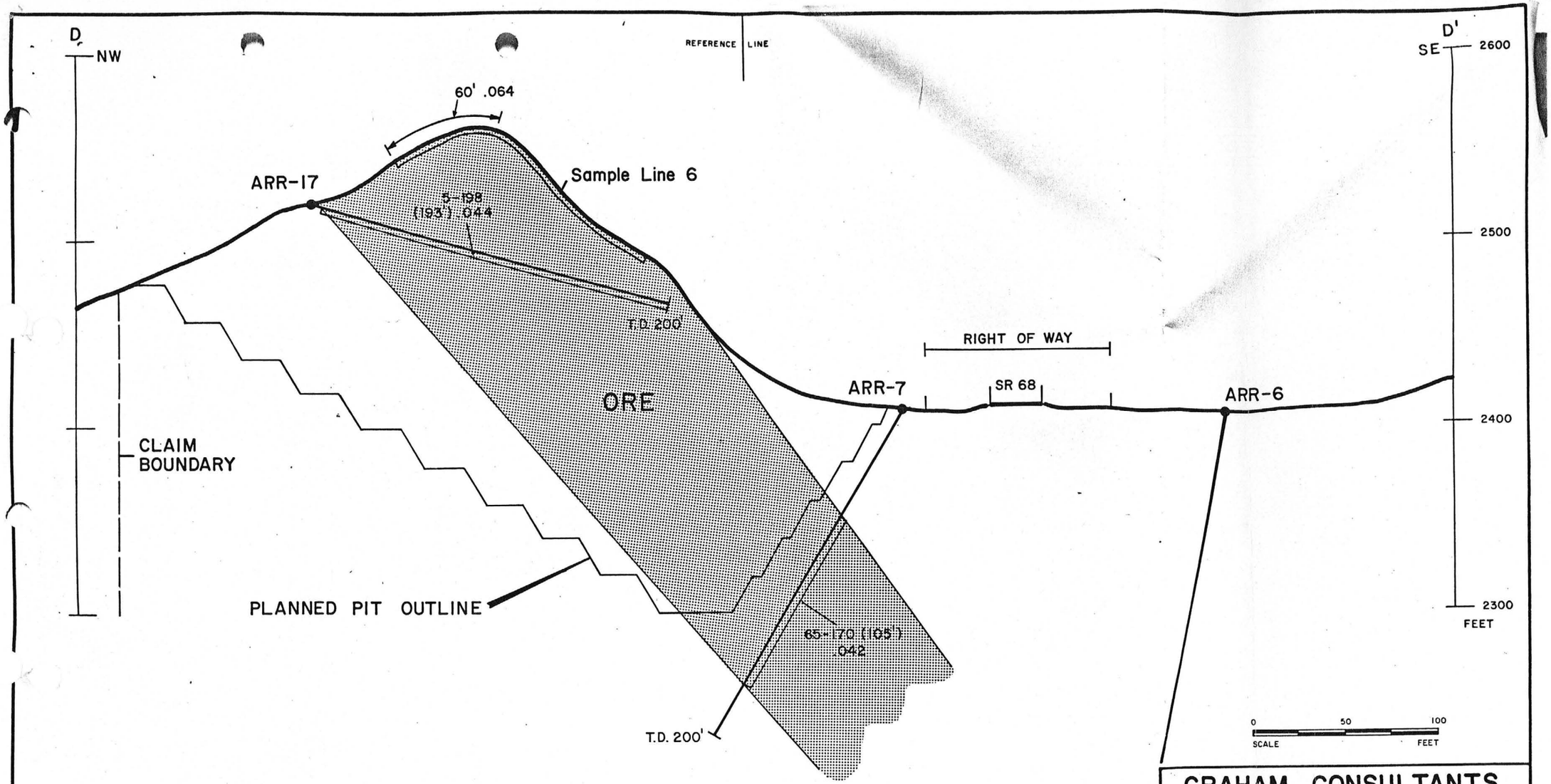
FIG. 3



DRILL HOLE WITH MINERALIZED INTERCEPT

FIGURES GIVE INTERCEPT LENGTH IN FEET AND GOLD GRADE IN OZ/TON.

FIG. 4

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT

CROSS SECTION D-D'

WITH PLANNED PIT OUTLINE

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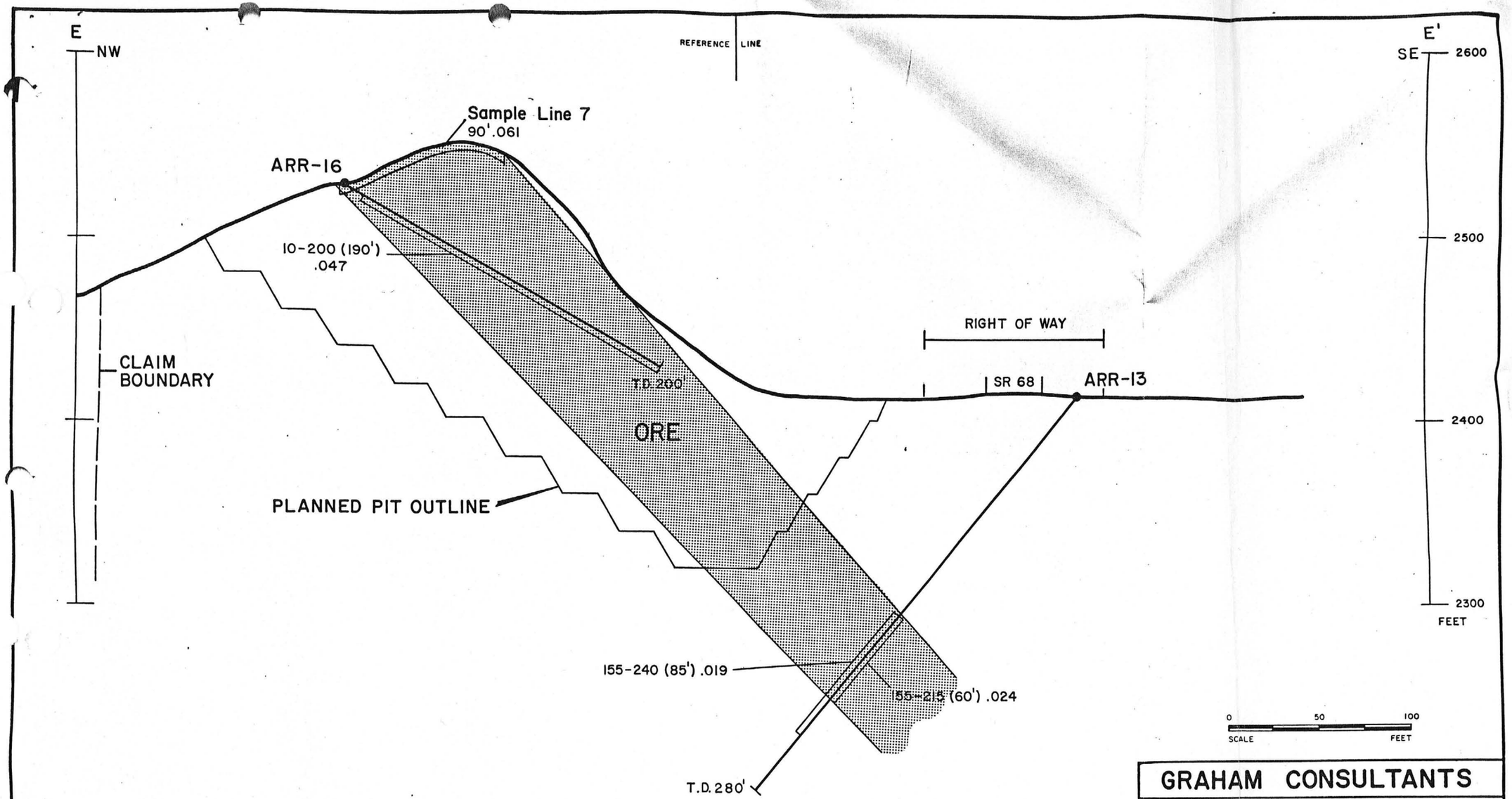

DRILL HOLE WITH MINERALIZED INTERCEPT

FIGURES GIVE INTERCEPT LENGTH IN FEET AND GOLD GRADE IN OZ/TON.

FIG. 5

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT
CROSS SECTION E-E'
WITH PLANNED PIT OUTLINE

DATE:	DATA COMPILATION:	DRAFTED BY:
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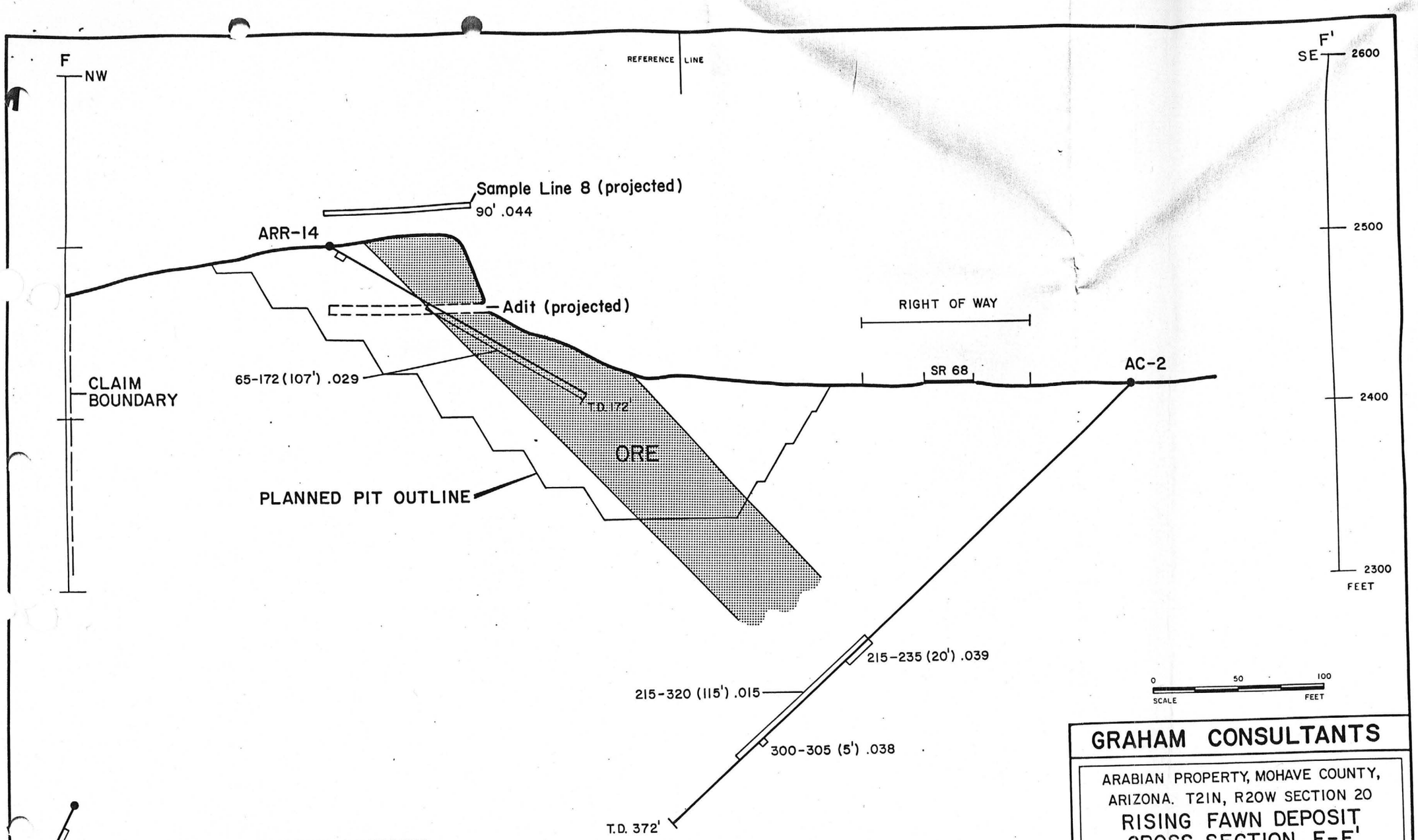

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT CROSS SECTION F-F'

WITH PLANNED PIT OUTLINE

DATE:	DATA COMPILATION:	DRAFTED BY:
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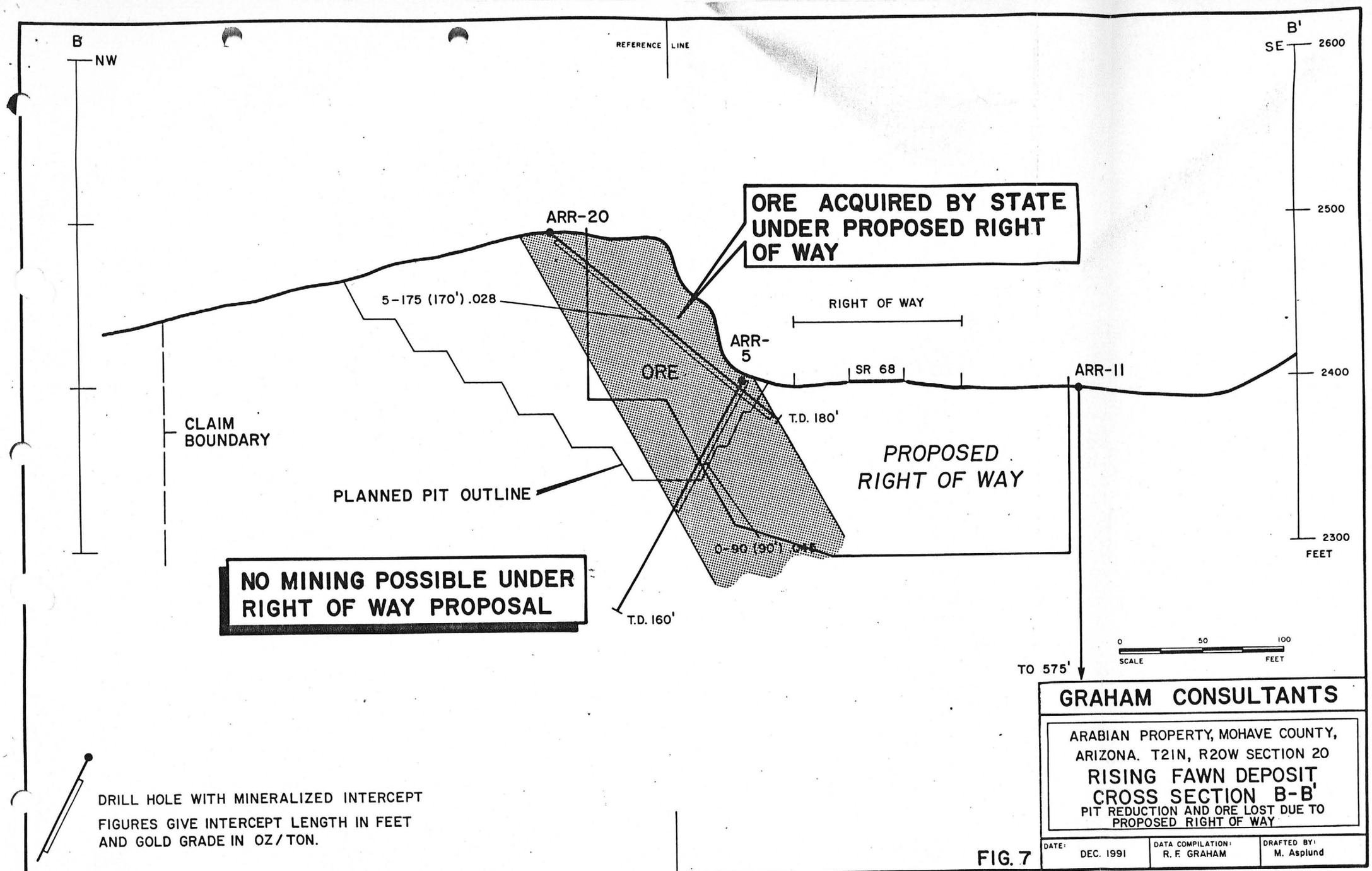
FIG. 6



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ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT
CROSS SECTION B-B'
PIT REDUCTION AND ORE LOST DUE TO PROPOSED RIGHT OF WAY

DATE:	DATA COMPILATION:	DRAFTED BY:
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FIG. 7

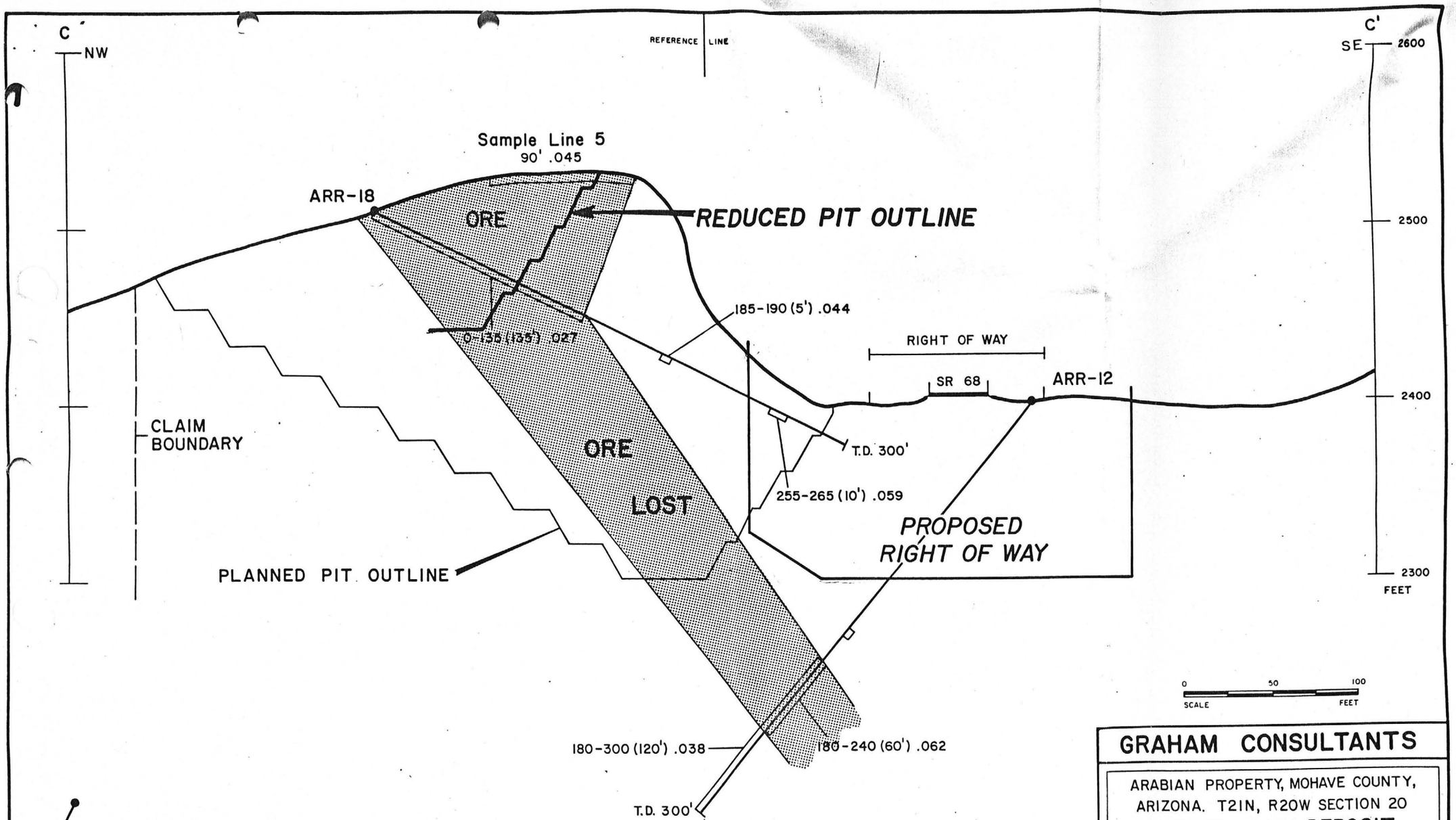

FIG. 8

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT
CROSS SECTION C-C'

PIT REDUCTION AND ORE LOST DUE TO PROPOSED RIGHT OF WAY

DATE:	DATA COMPILATION:	DRAFTED BY:
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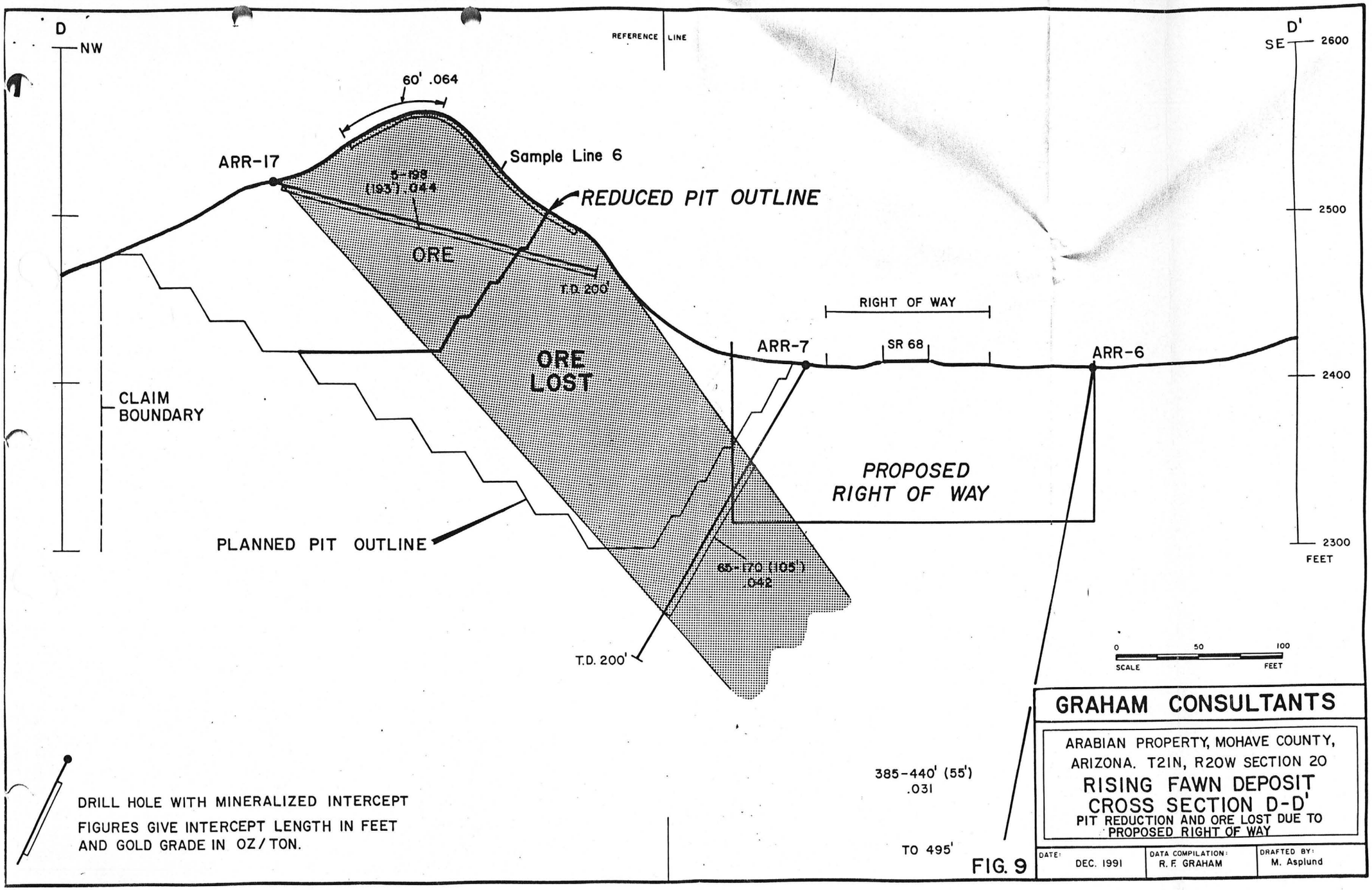

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT CROSS SECTION D-D'

PIT REDUCTION AND ORE LOST DUE TO PROPOSED RIGHT OF WAY

DATE:	DATA COMPILATION:	DRAFTED BY:
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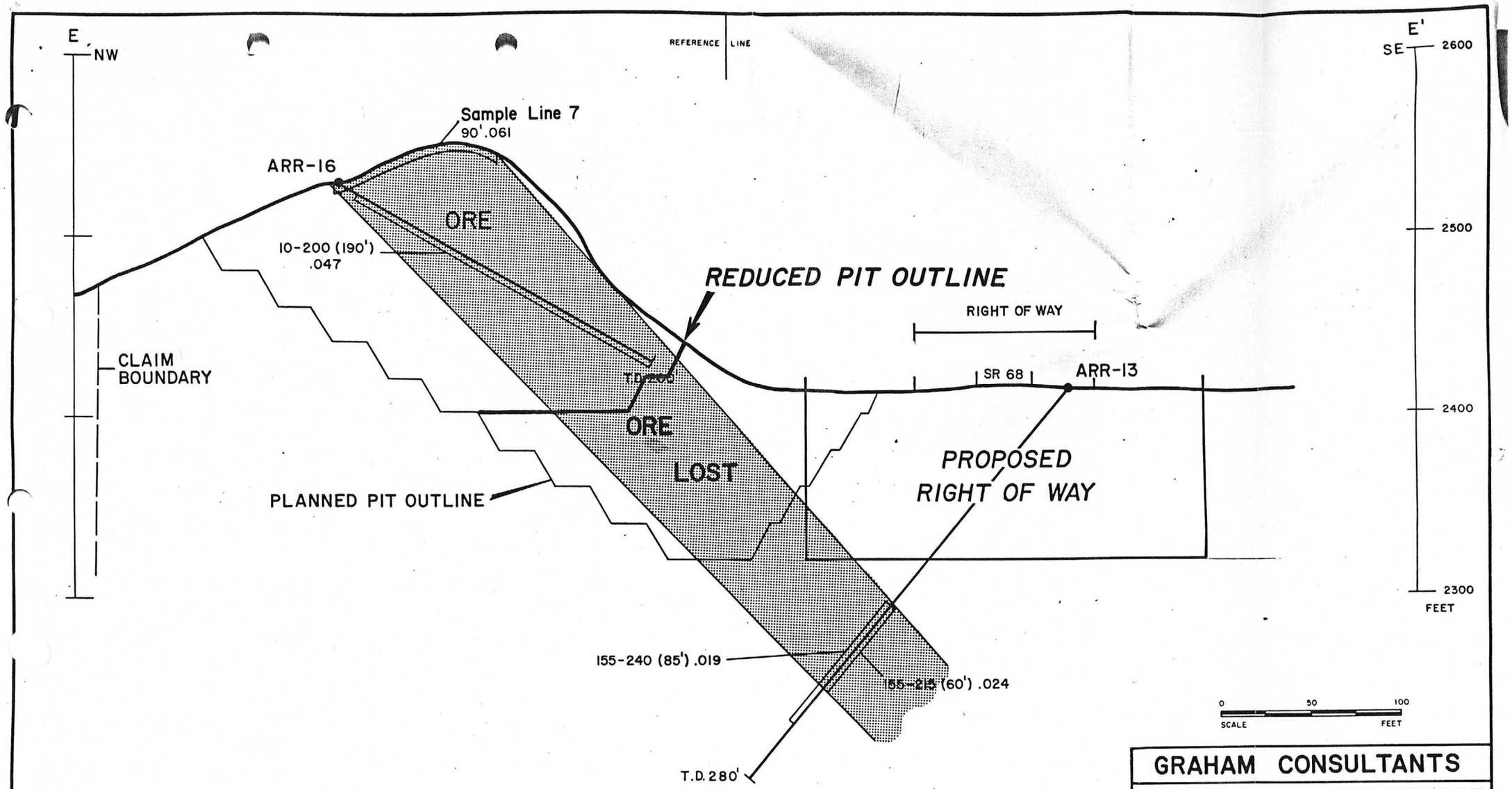
FIG. 9



DRILL HOLE WITH MINERALIZED INTERCEPT

FIGURES GIVE INTERCEPT LENGTH IN FEET AND GOLD GRADE IN OZ/TON.

FIG. 10

GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT
CROSS SECTION E-E'

PIT REDUCTION AND ORE LOST DUE TO PROPOSED RIGHT OF WAY

DATE:	DATA COMPILATION:	DRAFTED BY:
DEC. 1991	R. F. GRAHAM	M. Asplund

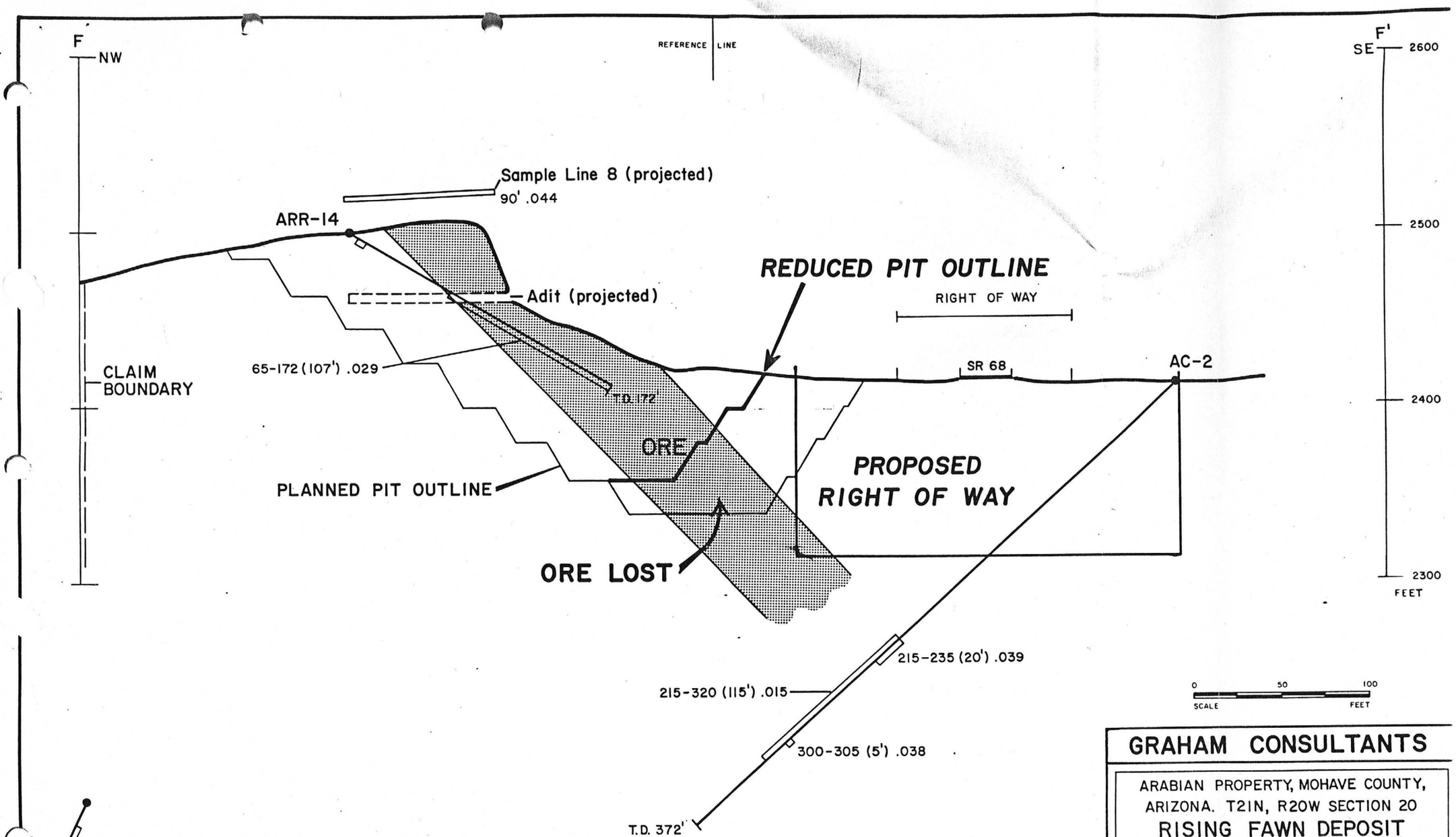


FIG. 11

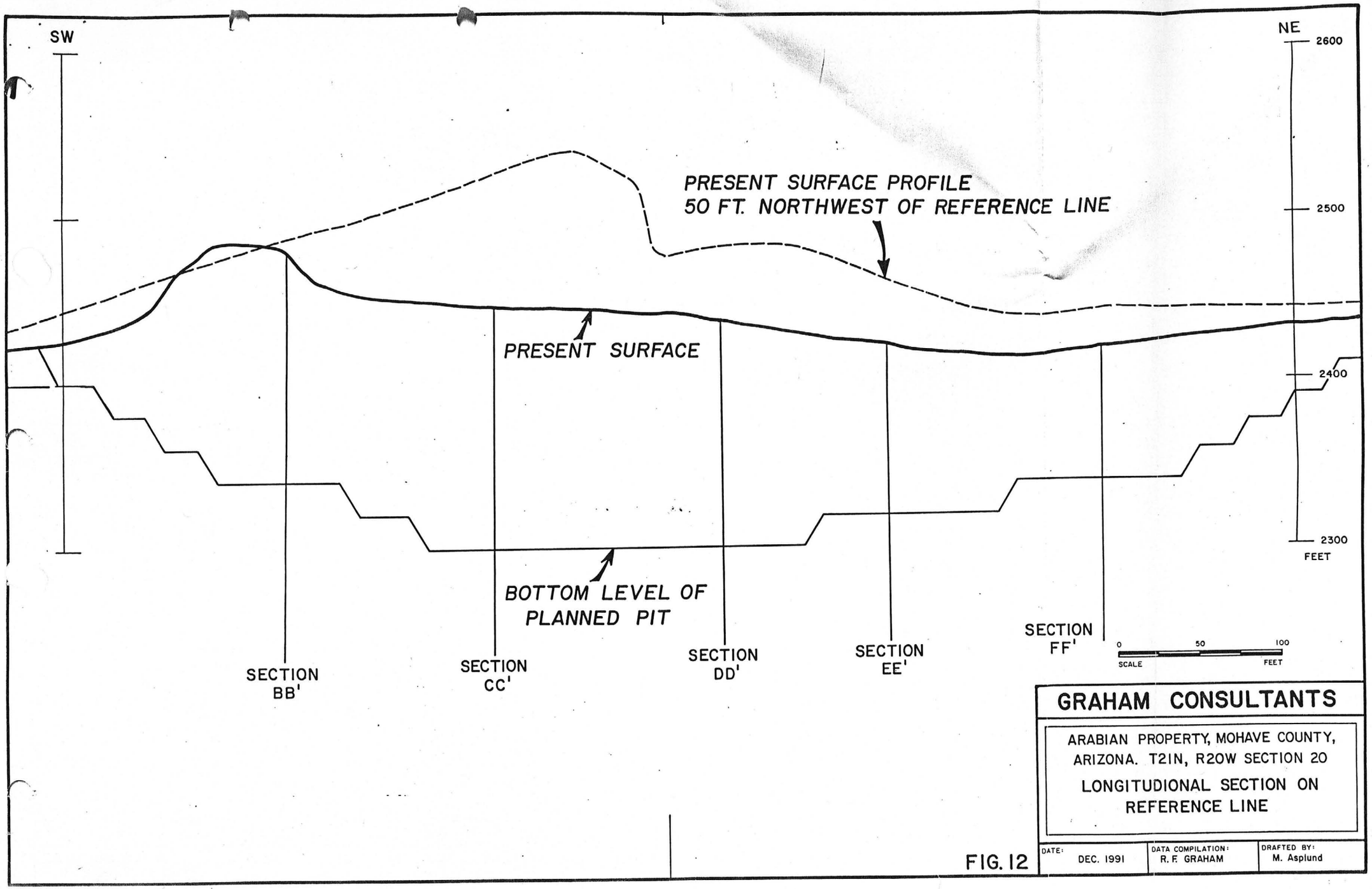
GRAHAM CONSULTANTS

ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

RISING FAWN DEPOSIT CROSS SECTION F-F'

PIT REDUCTION AND ORE LOST DUE TO PROPOSED RIGHT OF WAY

DATE	DATA COMPILATION:	DRAFTED BY:
DEC. 1991	R. F. GRAHAM	M. Asplund



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ARABIAN PROPERTY, MOHAVE COUNTY, ARIZONA. T21N, R20W SECTION 20

LONGITUDIONAL SECTION ON REFERENCE LINE

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FIG. 12

CROSS SECTION

18'

50'

6.5' 4.35 → 6' 7.36 → 7.5' 15.73 → 6' 4.68 → 6' 2.23 → 4 7.92 →

Average of 36' $7.32

CROSS SECTION

30'

50'

62'

110'

F.W. AT SURFACE

F.W. PROJECTED TO VALLEY FLOOR

F.W. ORE AT VALLEY FLOOR

PLAN

CROSS SECTION

42'

RISING FAWN ORE-BODY

SURFACE

20.21

16.92

22'

$9.70

11.76

14.42

23.15

14.31

14.10

8.70

14.87

12.57

8.80

3.84

19.91

16.78

16'

$11.00

60'

$4.98

80' LEVEL

FAULT

PROPOSED DRILL HOLE

215 FT.

15'

$10.00

CROSS - SECTION

PHILADELPHIA Nº 2. SHAFT

SHOWING ORE WIDTH AS INDICATED

BY ACTUAL SAMPLING

——— = DRILL HOLES

1 INCH = 10 FT.

73 SAMPLES IN THIS SHAFT BY A.B. RICHMOND

AVERAGED $ 11.56 PER TON